The Journal of the International College of Surgeons

GENEVE

35

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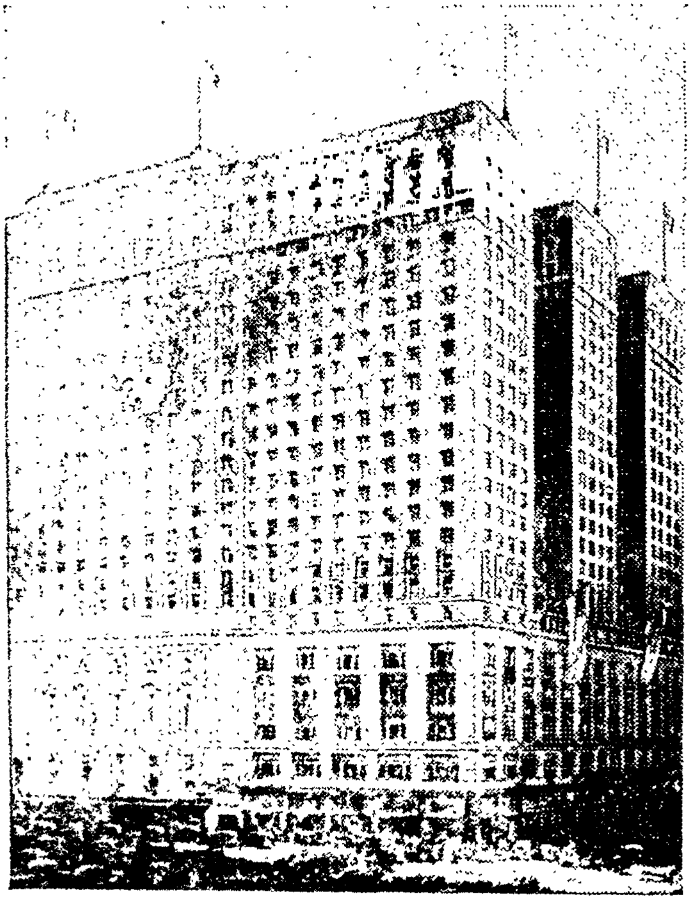

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CONTENTS—JULY, 1951

Surgical Treatment of Some Cardiovascular Diseases A New Vascular Anastomosis 1
Carlo A Carlon M D Paolo G Mondini, M D and Renato De Marchi, M D F I C S, Padua

Cardioesophageal Surgery 12
E J Borges, M S F R C S (Eng), F I C S Bombay

Meckel's Diverticulum 22
S J Carnazzo, B S, M D F A C S, F I C S, and E J McGreevy, B S M D Omaha

Prolapse of the Uterus An Operation for Its Relief 37
Aaron E Kanter, M D, F A C S F I C S Arthur H Klawans, M D, and Rudolf W Hack, M D, Chicago

Myoepithelial Hamartoma of the Stomach Wall 48
Max Thorek, M D, F I C S Chicago

The Surgical Approach to Glaucoma 58
Donald T. Atkinson, M.D., F.A.C.S., F.I.C.S., F.R.A.M. (Ireland), San Antonio

Preoperative and Postoperative Care in Gastric Surgery 73
S. H. Babington, M.D., F.I.C.S., Berkeley, California

Treatment of Trichomonas Vaginalis Vaginitis: II. Factors Affecting Response to Treatment 86
Walter J. Reich, M.D., F.A.C.S., F.I.C.S.; Helen L. Button, M.D., F.I.C.S., and Mitchell J. Nechtow, M.D., Chicago

Compression Fixation Arthrodesis of the Knee 93
Arthur A. Michele, M.D., and Frederick J. Krueger, M.D., Staten Island, New York

Estradiol Implants in Postoperative Pituitary Exophthalmos 98
M. V. Okie, M.D., H. B. Dence, M.D., and William Daley, M.D., Buffalo, N. Y.

Surgical Aspects of Meckel's Diverticulum 101
A. B. McGraw, M.D., F.A.C.S., Detroit.

Gallstones in Stomach Wall with Symptoms of Pyloric Stenosis: Report of a Case 105
Halit Ziya Konuralp, M.D., Istanbul, Turkey

Perforation of the Gallbladder 110
Joseph P. Cangelosi, M.D., A.I.C.S., Angelo L. Vincenti, M.D., A.I.C.S., and Edward Kalvelage, M.D., F.I.C.S., Chicago.

EDITORIALS

Iodine as a Skin Antiseptic Prior to Abdominal Operations 115

Summing Up the Summaries 116

CHAPTER NEWS 117

PRELIMINARY PROGRAM, SIXTEENTH ANNUAL ASSEMBLY, UNITED STATES CHAPTER, INTERNATIONAL COLLEGE OF SURGEONS 121

MOTION PICTURE PROGRAM 129

NEW BOOKS 130

ABSTRACTS FROM CURRENT LITERATURE 132

IN MEMORIAM 137

HOME OF THE INTERNATIONAL COLLEGE OF SURGEONS AND THE UNITED STATES CHAPTER 139

The Journal of the International College of Surgeons

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Max Thorek, M D, *Editor-in-Chief*
Henry W. Meyerding, M D
Francisco Graña, M D.

CONTENTS—AUGUST, 1951

Primary Carcinoma of the Ureter 141
Herman M Soloway M D F A C S, F I C S, Chicago

Primary Carcinoma of the Ureter 160
J Andrew Bowen, M D, F A C S, F I C S, and Lytle Atherton, M D, F A C S, F I C S, Louisville, Kentucky

Rhinoplastic Problems Confronting the Rhinologist 165
Matthew S Ersner, M D, F A C S, F I C S, Maurice H Alexander, M D, F I C S, and David Myers, M D, F A C S, F I C S, Philadelphia

Fractures of the Forearm 175
William Johnson, M D, F A C S, F I C S, R G Hickerson, M D, B E Malstrom, M D, and E G Behrents, M D, Galesburg, Illinois

Stellate Ganglion Block in Treatment of Acute Subdeltoid Bursitis 185
Everett J. Gordon, M.D., F.A.C.S., F.I.C.S., Washington, D. C.

Surgical Treatment of Abdominal Ascites Due to Cirrhosis of the Liver: Preliminary Experience with New Cannula Button in Peritoneosaphenous Anastomosis 199
Charles F. Schnee, M.D., C.M., F.I.C.S., Patchogue, New York

Simplified Photography for the Surgeon.. 208
John T. Lloyd, M.D., Bluffton, Indiana

The Automatic Surgical Photographer.. 213
A. L. Soresi, M.D., F.I.C.S., New York

oentgen Irradiation of the Adrenal Glands: Results of Indirect Hormonal Research.... 222
Manuel A. Manzanilla, Jr., Mexico D.F., Mexico

Drainage of the Infected Peritoneal Cavity.. 231
Anton P. Randazzo, M.D., C.M., F.I.C.S., and Emil Dul, M.D., Passaic, New Jersey

CASE REPORT

Diffuse Gastric Polyposis.. 240
Albin J. Sowka, M.D., and Edward H. Warszewski, M.D., F.A.C.S., F.I.C.S., Chicago

EDITORIALS

The Paris Orthopedic Clinics 245

CHAPTER NEWS 247

PROGRAM, SIXTEENTH ANNUAL ASSEMBLY, UNITED STATES CHAPTER, INTERNATIONAL COLLEGE OF SURGEONS.. 249

SCIENTIFIC MOTION PICTURE PROGRAM.. 258

SURGICAL FILM FORUM.. 261

IN MEMORIAM 262

HOME OF THE INTERNATIONAL COLLEGE OF SURGEONS AND THE UNITED STATES CHAPTER... 263

The Journal of the International College of Surgeons

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CONTENTS—SEPTEMBER, 1951

Carcinoid Tumors of the Rectum Report of Seven Cases 265
Michael C Tavenner, M D , Harry E Bacon, M D , F A C S , F I C S , and Augustin R Peale, M D , Philadelphia

Surgical Contrast Visualization of the Pancreatic Ducts 285
Prof Dr Lucien Leger, F I C S , Paris

Surgical Arteriovenous Fistula Between Right Common Carotid Artery and Internal Jugular Vein Effects in a Series of Thirty-Three Patients 289
John M Hammer, B S , M A , M D , F A C S F I C S , H Sidney Heersma, M D , John R MacGregor, M D , Robert S Dew, M D , Eugene A Osius, M D , F A C S , and Albert de Groat, M D , Kalamazoo, Michigan

Operative Treatment of Osteoarthritis of the Hip-Joint 309
George Chapchal, M D , F I C S , Utrecht, Holland

Suprapubic Prostatectomy 318
H. L. Vaidya, M.B.B.S. (Bombay), F.C.P.S. (Bombay), L.R.C.P. (London), M.R.C.S. (England), F.R.C.S., (Edin.), D.L.O. (London), F.I.C.S. (U.S.A.), Bhavnagar, India

Intestinal Obstruction Due to Gallstones: Report of Two Cases 325
Walter A. Calihan, M.D., F.A.C.S., Rochester, New York, and Harold F. Hulbert, M.D., F.A.C.S., F.I.C.S., Dansville, New York

Surgical Lesions of Adult Type in Young Persons 334
Wyatt C. Simpson, M.D., M.S. in Surgery, F.A.C.S., F.I.C.S., Florence, Alabama

Acute Pancreatitis: Observations on Two Hundred and Fifty Cases 337
Laurence S. Fallis, M.D., F.A.C.S., Detroit

Accurate Femoral Length Determination 342
W. J. Lehman, M.D., Knoxville, Tennessee

Refrigeration in Medicine and Surgery 346
Joseph C. Doane, M.D., and Hymen D. Stein, M.D., A.I.C.S., Philadelphia

Primary Retroperitoneal Teratoma: Successful Removal from a Boy Three Weeks Old .. 350
Jorge Michalany, M.D., A.I.C.S., Edgard Ferraz Navarro, M.D., F.I.C.S., Venancio Alves Filho, M.D., Santos, S.P., Brazil

Sulfhydryl in Tissue Respiration and Repair as Applied to Burns in Ophthalmology 356
Archie Edward Cruthirds, M.D., F.A.C.S., F.I.C.S., Phoenix, Arizona

Hysterectomies in Private Practice 365
H. Glenn Wallace, M.D., A.I.C.S., Santa Ana, California

Diaphragmatic Hiatus Hernia: Repair by Abdominal or Transthoracic Approach; Critical Analysis of Fifty-Five Cases 374
J. Norman O'Neill, M.D., F.A.C.S., Los Angeles

Treatment of Perforated Gastroduodenal Ulcer 379
Johannes Eberle, M.D., Salzburg, Austria

Indications for Use of Scalp Forceps 382
H. Zacherl, M.D., F.I.C.S., Vienna, Austria

EDITORIAL

Radical Mastectomy: A Comment on the Validity of the Procedure 385

CHAPTER NEWS 388

GENERAL NEWS NOTES 392

NEW BOOKS 395

ABSTRACTS FROM CURRENT LITERATURE 398

IN MEMORIAM 404

HOME OF THE INTERNATIONAL COLLEGE OF SURGEONS AND THE UNITED STATES CHAPTER... 405

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CONTENTS—OCTOBER, 1951

Medullary K-Nailing of Humerus to Spine of Scapula for Arthrodesis of Shoulder 407-9
Garrett Pipkin, M D, F A A O S, F I C S, Kansas City, Missouri

Phleboliths 419
Alfonso de la Pena, M D, F I C S, (Hon) and J Reig, M D, Madrid

Operative Position for Intrathoracic Procedures 424
Reeve H Betts, M D, F A C S, F I C S, Vellore, South India

Prefrontal Lobotomy for Phantom Limb and Phantom Pain 432
A J Beller, M D, F I C S, and E Peyser, M D, Jerusalem, Israel

Surgical Repair of Subcutaneous Tissue Defects 436
Morton I Berson, M D, New York

Management of the Retained Placenta 445
Robert F. Monroe, M.D., F.I.C.S., and David E. Booker, M.D., Louisville, Kentucky

Multiple Primary Malignant Lesions of the Colon: Report of a Case 454
Albert Behrend, M.D., F.A.C.S., F.I.C.S., and Hymen D. Stein, M.D., Philadelphia

Genital Fistulas—A Review of Sixty-Nine Cases 460
H. M. Lazarus, M.D., F.I.C.S.

An Accurate Surgical Approach to the Appendix 470
Earle I. Greene, M.D., F.A.C.S., and J. Major Greene, M.D., F.A.C.S., F.I.C.S., Chicago

Prolapsed Antral Mucosa: Report of a Case 475
V. J. Hittner, M.D., F.A.C.S., F.I.C.S., F.I.A.P., Seymour, Wisconsin

A Modified T-Tube Drain 479
Eli Sherman Jones, B.S., M.D., F.A.C.S., F.I.C.S., Hammond, Indiana

Retropubic Prostatectomy 481
G. M. Phadke, M.B. (Lond.), F.R.E.S. (Eng.), F.I.C.S., Bombay

Total Versus Subtotal Abdominal Hysterectomy 486
Paul S. Doege, M.D., F.A.C.S., F.I.C.S., Marshfield, Wisconsin

EDITORIAL

College Activities 492

CHAPTER NEWS 532

GENERAL NEWS NOTES 534

NEW BOOKS 536

ABSTRACTS FROM CURRENT LITERATURE 538

IN MEMORIAM 540

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Francisco Graña, M D

CONTENTS—NOVEMBER, 1951

Portrait of a Gentleman 543
Max Thorek, M D, F I C S, Chicago

Cervical Ribs Symptoms, Differential Diagnosis and Indications for Section of the Insertion of the Scalenus Anticus Muscle 546
Alfred W Adson, M D, F A C S, F I C S, Rochester, Minnesota

Carcinoma of the Stomach A Plea for Earlier Diagnosis and More Radical Treatment 560
Samuel F Marshall, M D, F A C S, Boston

Tumors of the Ovary Endocrine and Other Rare Ovarian Growths 567
Gilbert F Douglas, M D, F A C S, F I C S, George Capers Douglas, B S, M D, and Gilbert F Douglas, Jr, B S, M D, Birmingham, Alabama

Surgical Treatment of Esophageal Hiatus Hernia: A Study of Forty-Two Cases......... 578
M. X. Anderson, M.S., M.D., F.A.C.S., D.A.B.S., F.I.C.S., D.I.B.S., Los Angeles

Evaluation of the Surgical Treatment of Congenital Pulmonary Stenosis................ 602
Willis J. Potts, M.D., F.A.C.S., Chicago

Suction Surgical Treatment of Cataract in Children: Visual Rehabilitation............. 608
Otis R. Wolfe, M.D., F.I.C.S., and Russell M. Wolfe, M.D., F.I.C.S., Marshalltown, Iowa

Treatment of the Postsurgical Menopause by Implantation of Estradiol Pellets......... 622
S. D. Soule, M.D., F.A.C.S., St. Louis

Carcinoma of the Pancreas with Roentgen Pattern of Nontropical Sprue................ 631
Meyer O. Cantor, M.D., F.A.C.S., and Leonard Haking, M.D., Detroit

Difficult Hernias: Use of Tantalum Mesh in Repair 637
Amos R. Koontz, M.D., F.A.C.S., Baltimore

Bleeding Peptic Ulcer 644
Earl A. Connolly, M.D., F.I.C.S., and Russell B. Williams, M.D., Omaha, Nebraska

Splint for Treatment of Buttonhole Rupture of Extensor Tendon at Middle Finger Joint. 649
Robert E. Van Demark, M.D., F.A.C.S., F.I.C.S., Sioux Falls, South Dakota

Bilateral Successive Coexistent Tubal Pregnancies 654
E. Spier, M.D., F.I.C.S., El Paso, Texas

EDITORIAL
The International College of Surgeons: A Teaching Institution 659

POSTGRADUATE COURSES
Preassembly Courses Offered by the International College of Surgeons in Cooperation with the Cook County Graduate School of Medicine 660

CHAPTER NEWS 666

GENERAL NEWS NOTES 669

NEW BOOKS 670

ABSTRACTS FROM CURRENT LITERATURE 672

IN MEMORIAM 676

HOME OF THE INTERNATIONAL COLLEGE OF SURGEONS AND THE UNITED STATES CHAPTER... 677

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CONTENTS—DECEMBER, 1951

The Passing of a Pioneer 681
Max Thorek, M D, F I C S, Chicago

Mediastinal Tumors Angiocardiographic Study of Sixty five Proved Cases 684
Charles T Dotter, M D, and Israel Steinberg, M D New York

A Critical Appraisal of the Extension of Radical Operation for Rectal Cancer 691
Harry E Bacon, M D F A C S F A P S, F R S M F I C S Lowrain E McCrea, M D, F A C S, F I C S, and Howard D Trimpi, M S M D, Philadelphia

Rupture of the Pregnant Uterus 706
Walter W Daniel, M D, F I C S and John S Inman Jr M D Atlanta

Intra-Arterial Transfusion of Blood 716
Charles S White, M D, Sc D, F A C S, F I C S, and Donald Stubbs, M D, Washington, D C

†Deceased

Cystic Torsion of Ovarian Pedicle in Infants and Children............................ 724
C. A. Proane C., F.I.C.S., Lima, Peru

Retroperitoneal Cysts and Tumors..731
Martin Nordland, M.D., F.I.C.S., and Martin A. Nordland, M.D., Minneapolis

Postoperative Esophagitis Requiring Surgical Treatment.......................... 740
Major Thomas H. Hewlett, M.C., and Albert Behrend, M.D., Philadelphia

An Evaluation of the Operative Treatment of Ruptured Lumbar Discs................ 746
Marion B. Noyes, M.D., F.A.C.S., F.I.C.S., San Francisco, and James A. Hunter, M.D., Vineyard Haven, Massachusetts

Papilloma of the Bladder.. 753
Clement P. O'Neill, B.S., M.D., F.A.C.S., F.I.C.S., Rock Island, Illinois

Current Conceptions of Nonsuppurative Labyrinthitis 759
G. B. Trible, M.D., F.A.C.S., F.I.C.S., Washington, D. C.

Heterotopic Pregnancy with Tubal Abortion....................................765
John R. Sprague, M.D., F.I.C.S., and Edward A. Sprague, M.C., A.I.C.S., Athens, Ohio

Intracardiac Valvular Surgery for Congenital Pulmonary Stenosis and Acquired Mitral Stenosis 768
Egbert H. Fell, M.D., F.A.C.S., Chicago

Perforated Bowel with Inguinal Hernia...................................... 776
Sidney Vernon, M.D., F.A.C.S., F.I.C.S., Manchester, Connecticut

Dromoran In General Surgery.. 779
Fred J. Crescente, M.D., A.I.C.S., Paterson, New Jersey

Endoscopic Photography in Proctology...................................... 783
Harry L. Feit, M.D., A.I.C.S., Brooklyn

EDITORIALS

The History of Regional Enteritis...................................... 790
Practical Aspects of Doctor-Patient Relations 794

CHAPTER NEWS 796

POSTGRADUATE COURSES

Preassembly Courses Offered by the International College of Surgeons in Cooperation with the Cook County School of Medicine 797

GENERAL NEWS NOTES.. 803

ABSTRACTS FROM CURRENT LITERATURE.. 806

IN MEMORIAM.. 811

VOLUME INDEX.. 813

COLLEGE INTERNATIONAL DES CHIRURGIENS

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Vol. XVI JULY, 1951 No. 1

Original Articles

Surgical Treatment of Some Cardiovascular Diseases

(A New Vascular Anastomosis)

CARLO A. CARLON, M D, PAOLO G MONDINI, M D., AND
RENATO DE MARCHI, M D, F I C S
PADUA

THE causes of cyanosis associated with the cardiovascular diseases of the fourth group of Abbott's classification, according to Lunsgaard and Van Slyke, are as follows: (1) the degree of oxygen saturation of the blood returning from the lungs; (2) the percentage of venous blood passing from the right to the left side of the heart by an anomalous route which does not permit normal oxygenation; (3) the total hemoglobin content, and (4) the degree of blood oxygenation in the capillaries.

Blalock's studies on the possibility of increasing the blood flow to the lungs, as well as the operation first performed by him for surgical treatment of the so-called tetralogy of Fallot and stenosis of the pulmonary artery, is too well known to require discussion here.

One of us (Carlon), studying the diagnostic and therapeutic problems encountered with cardiovascular diseases, believed it possible and much more convenient to increase this blood flow with venous blood instead of arteriovenous blood as used by Blalock. In his opinion, advantage would be served if the blood of the superior vena cava should reach the capillary region of the right lung by way of a convenient anastomosis between that great venous trunk and the arterial system of the right lung. We are not aware that anyone else has foreseen and studied the problem of oxygenation of the pulmonary blood under venous pressure and without cardiac output, but we have been supported in our experiments by the following considerations:

1. The suction of the right auric really no advantage, because the gr quantity of blood coming by way of

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From the Surgical Clinic of the University of Padua Prof Dr Galeno Ceccarelli Director Submitted for publication May 20, 1951.

two caval veins easily reaches the right side of the heart because of *vis a tergo* and thoracic suction during respiratory movements.

2. After the operation, we have thought that the comparatively slight suctional strength of the right auricle could have failed under the normal factors supporting the circulation in the superior vena cava.

3. It is well known that the systolic impulse decreases from center to periphery and diminishes in the capillary and precapillary passageways, where it arrives under practically continuous pressure.

4. In the region of the pulmonary artery the systolic pressure is much lower than in that of the aorta. The former varies from 20 to 30 millimeters of mercury, and the level is even lower in the presence of pulmonary stenosis.

5. It is also well known that in the venous system it is possible to verify pressure levels attaining and surpassing these values; in cases of Pick's disease, venous pressure in the cephalic or the basilic veins may reach the point of 40 to 50 cm. of water.

6. If the superior vena cava is tied and its blood shunted into the right branch of the pulmonary artery through the azygos vein, an increase in caval pressure should take place in proportion to (1) the quantity of caval blood passing through the anastomosis in a given time and (2) the resistance opposed by the pulmonary capillaries. (In our dogs the venous pressure in the jugular vein and therefore in the superior vena cava oscillated, after operation, between 10 and 15 cm. of water, which is a pressure perfectly supported by the venous system and the tissues supplied by it.

7. After the anastomosis there should be a continuous pressure *already* in the right branch of the pulmonary artery and in the arterial vessels carrying the blood therefrom.

8. The pulmonary capillaries are short and of large caliber, an anatomic condition that helps the passage of blood into the venous capillaries.

9. The rhythmic expansion and collapse of the breathing lungs are aids to circulation.

10. On expansion of the lung the blood of the capillaries should flow to the pulmonary veins, because there is very low pressure, especially during the left auricular diastole, while in the arterial precapillaries there takes place the repercussion of the increase of pressure in the vena cava; this means that at this level the physiologic conditions again approximate the normal.

With these presuppositions we began our experiments. The initial problem was to send the blood flow from the superior vena cava to the right pulmonary artery. The first type of anastomosis we tried was end-to-end, between these two vessels; but the first 2 dogs died during the operation, probably unable to tolerate the sudden closure of the vena cava.

In the third dog we tried a similar anastomosis but diverted the caval blood through the azygos vein to the femoral vein by way of a rubber tube so as to obtain sufficient drainage. This dog also died during the operation, owing to closure of the tube, which had not been sufficiently coated with paraffin. In the fourth dog we repeated the experiment, connecting the aforementioned rubber tube to Mondini's cardiopulmonary machine and heparinizing the animal. This time we succeeded. There was no evidence of cardiac failure, and the dog's blood remained perfectly oxygenated. However, when we removed the bulldog clamps from the superior vena cava and the right pulmonary artery a fatal hemorrhage occurred, starting from the point of anastomosis. Evidently the anastomotic suture had been imperfect; the caliber of the vena cava was larger than that of the pulmonary artery, and we realized that we should have "gathered" the anastomotic end of the former to match the size of the latter before uniting them. Since the suture line was imperfect and the animal had been heparinized, there was no formation of small thrombi to fill the defects in the seam. In this experiment

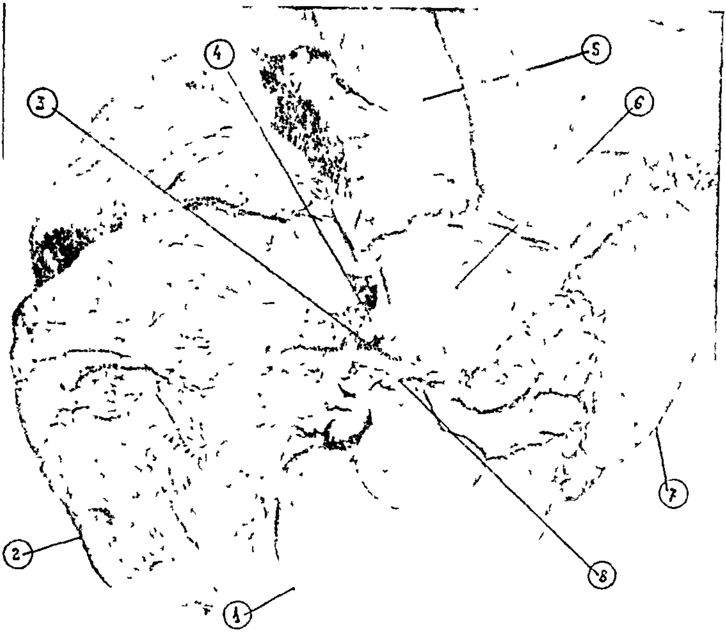

Fig. 1.—Cardiopulmonary apparatus of dog 8, which died on the eleventh day after operation because of bilateral empyema and pericarditis *1*, right ventricle; *2*, right lung; *3*, right branch of pulmonary artery; *4*, anastomosis between the azygos vein and the right pulmonary artery; *5*, trachea, *6*, superior vena cava completely opened; *7*, left lung; *8*, ligature of the superior vena cava at its opening into the right auricle.

we noted that the caliber of the azygos vein is about the same as that of the right pulmonary artery. Therefore, in the fifth dog, we decided to use the azygos vein for the anastomosis, first tying and cutting it 3 or 4 cm. from its opening in the superior vena cava. In this way we were able to divert the caval blood, accomplishing ligation in advance of opening into the right auricle and under the end of the azygos.

We performed this anastomosis on 3 dogs and in all cases were successful. There was no cardiac failure, and the blood remained well oxygenated. There was some turgidity of the sublingual veins and the veins of the upper half of the body.

The jugular venous pressure after the operation ranged from 10 to 15 cm. of water. The lobar branches of the right pulmonary artery were full and lightly pulsating. The right pulmonary veins appeared normal.

These dogs died from three to twenty-four hours after the operation. At autopsy, in all 3 cases, it was observed that a thrombus had closed the anastomosis We concluded that retarded circulation, the result of venous pressure, had

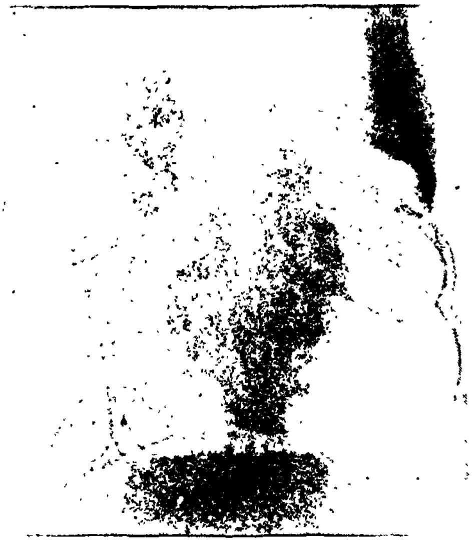

Fig. 2.—Pneumoangiograph of dog 9; third seriogram taken after injection of 40 cc. of 70 per cent pielosyl into the right external jugular vein. The intraparenchymal branches of the pulmonary artery appear perfectly filled all the way into the right lung.

favored the formation of thrombi. We were not discouraged, however, because we felt that if the anastomosis was functioning at the end of the operation, permitting the animals to recover and to survive for a certain time, it would mean that the circulatory conditions created by the anastomosis were compatible with life while the anastomosis remained functional. Therefore we decided to heparinize the animals after completing the anastomotic suture and before removing the clamps from the azygos vein and the right pulmonary artery.

We realized that this would present some difficulties. First, careful hemostasis of the thoracic wall; and second, the necessity of a perfect anastomotic suture, which would not be easy because of the fragility of the azygos wall. Nevertheless, the eighth dog tolerated the operation, returned to normal shortly after completion of the procedure and survived eleven days without showing any sign of cardiac or respiratory failure.

During the operative procedure the cuff of the tracheal tube tore while the animal was apnoic, and it was necessary to intubate the dog at once. After this the operating field was no longer sterile. Moreover, hemostasis of the thoracic wall had not been perfect, and during dissection of the vessels we accidentally damaged the right lung. The result of these surgical accidents was a pneumothorax, with subcutaneous emphysema and postoperative infection of the operative wound. On the eighth postoperative day there was inflammatory edema of the right foreleg, evidently due to secondary phlebitis, in spite of the administration of penicillin and sulfonamides. Yet on the tenth day after the operation, and only a few hours before its death, the dog went up and down three flights of stairs without any sign of cardiac failure. At autopsy, which was performed with the collaboration of Dr. Zagnoni, histopathologist in our Clinic, the opening of the thorax disclosed bilateral empyema, with several liters of pus. The pericardium showed purulent serositis, with 500 cc. of pus. There were no signs of lymphorrhagia. The anastomosis between the azygos vein and the right pulmonary artery was patent and functioning. The size and thickness of the heart were normal. We removed the heart, together with the great vessels, the lungs and the trachea (Fig. 1).

When we opened the superior vena cava we realized that its entrance to the right auricle was completely closed and that the venous wall had adapted itself to the new circulatory conditions and shaped itself like a funnel around the opening of the azygos vein.

On opening the azygos vein we noted that the anastomotic suture was completely covered by glistening endothelium. It was possible to recognize the end of the vein and the beginning of the artery because the artery was ivory white and the vein wine pink.

We performed this operation on 2 more dogs. The first of them died during angiocardiographic investigation with 40 cc. of pyelosyl at a high concentration (70 per cent). It is well known that iodine in such a concentration is fatal to dogs in most cases. The angiocardiographs showed that the anastomosis was functioning perfectly and that the arterial system of the right lung was completely filled. In addition, the speed of circulation was almost normal; as a matter of fact, the iodine, which was perfectly visible in the right lung in the third seriogram (Fig. 2), was no longer visible in the fourth, taken only two seconds later.

The last dog operated on is still alive and apparently healthy at the time of writing. An electrocardiogram taken on the seventh postoperative day appeared almost normal. From the third postoperative day the animal has eaten, drunk and behaved quite normally. There is no sign of cerebral stasis. The dog walks up and down three flights of stairs as any normal dog would; it pants normally when in the sun, but there has been no sign whatever of pain or illness.

OPERATIVE TECHNIC

Anesthesia.—Local procaine anesthesia of the femoral vein was induced at Scarpa's triangle and a needle was inserted into the vein. Four to 6 cc. of 5 per cent pentothal sodium was injected, and a Magill tube with an inflatable cuff was placed in the trachea. Through the same needle a continuous flow of 5 per cent dextrose solution is administered Anesthesia is maintained with ether-oxygen. Ten to 15 mg. of curarine is added at the opening of the pleura.

Procedure.—An incision is made in the fourth right intercostal space, from the sternum to the middle or posterior axillary line, the dog lying in the left lateral position. Hemostasis of the thoracic wall is made as nearly perfect as possible. (This is the most time-consuming part of the procedure, but it is also the most important; the dog should be heparinized for several days after the operation, and it is obvious that even a small hemorrhage may be dangerous, either because of the loss of blood or because of the possibility of fatal infection

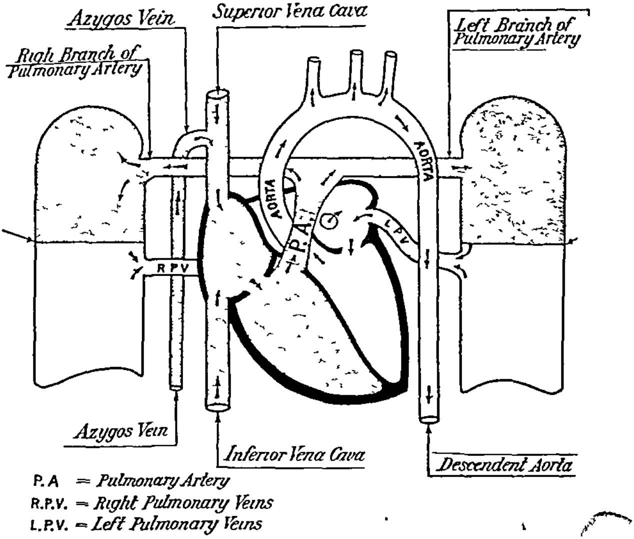
Azygos Vein
Superior Vena Cava
Left Branch of Pulmonary Artery
Right Branch of Pulmonary Artery
AORTA
AORTA
P.A.
L.P.V.
R.P.V.
Azygos Vein
Inferior Vena Cava
Descendent Aorta
P.A = Pulmonary Artery
R.P.V. = Right Pulmonary Veins
L.P.V. = Left Pulmonary Veins

Fig 3.—Diagram of a normal circulatory cycle The anatomic and functional relationships of the physical structures involved are clearly indicated.

due to accumulations of blood in the pleural cavity.) When the right pleura is opened, the posterior portion of the mediastinum and the costovertebral angle are examined. The superior vena cava and the azygos vein are identified, after which the parietal pleura is incised above the azygos vein and the latter isolated by means of a forceps, tied with two heavy silk sutures and divided between them (Fig. 4). The tie nearest the vena cava is reinforced by a lighter one. The sutures are left long, thus becoming aids in isolating the azygos vein and lifting it forward and upward. This facilitates the remaining steps of the operation. When the azygos vein has been isolated, it is easy to find the branch to the upper lobe of the right pulmonary artery, which lies in the triangle limited anteriorly by the azygos vein, medially by the superior vena cava and posteriorly by the right pulmonary hilum. After this it is easy to identify and isolate the right branch of the pulmonary artery.

At this time it is a good precaution to inject (intravenously) 7 or 8 cc. of 1 per cent procaine hydrochloride. Four to 5 cc. of the same solution may be injected into the pericardium. This eliminates cardiac arrhythmia or fibrillation.

The right pulmonary artery should be

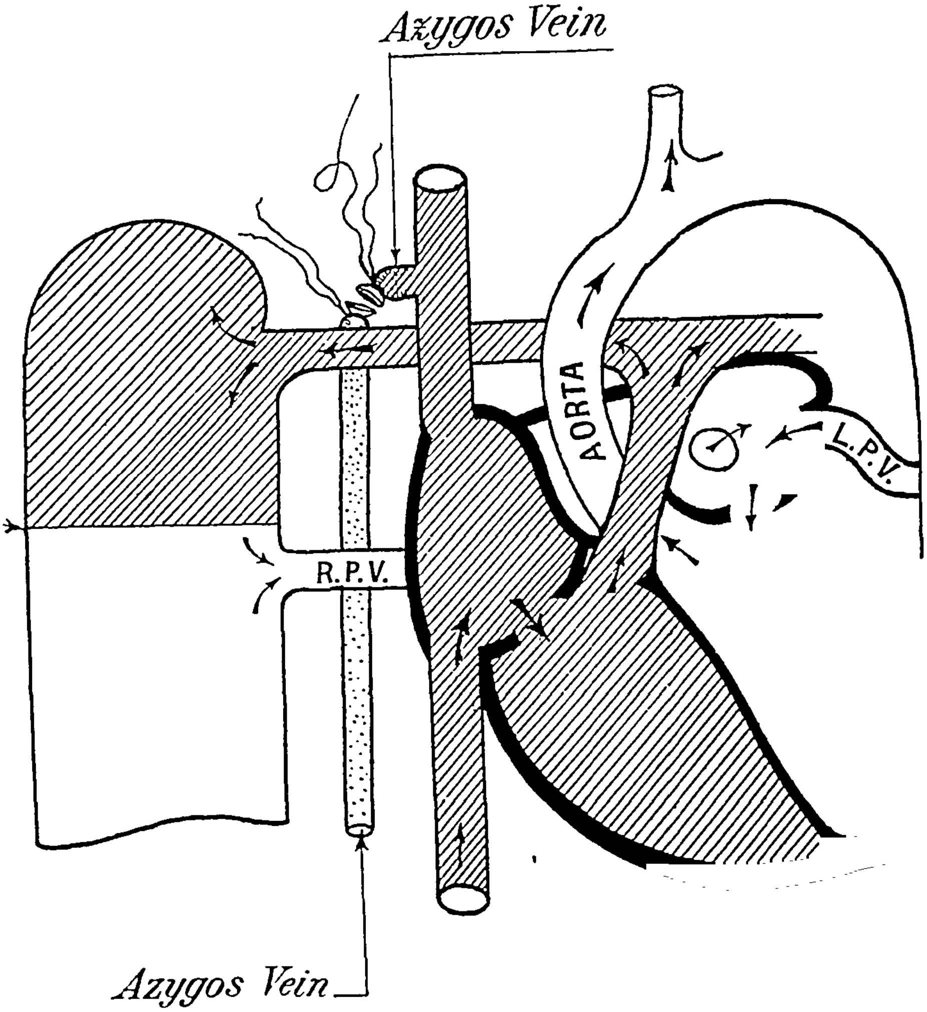

Fig. 4.—First step in the operation; isolation, tying and sectioning of the azygos vein.

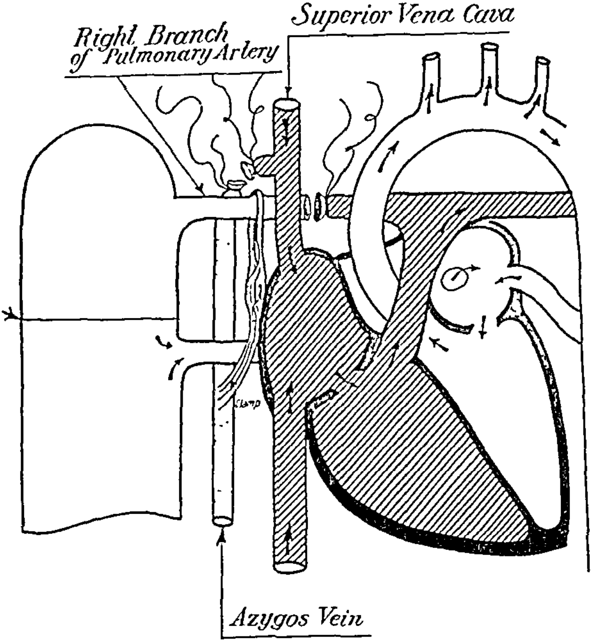

Fig. 5.—Second step in the operation; isolation, tying and sectioning of the right pulmonary artery.

isolated as far as possible and, as a rule, as far as possible behind the aortic arch, near its origin from the main pulmonary artery. At this level two heavy silk sutures are placed, as far apart as possible, on the artery. A Blalock or other clamp is placed at the introitus of the right pulmonary artery into the right pulmonary hilum, so that the vessel is compressed in a superior-inferior direction. It is then cut as close as possible to the deep ligatures (Fig. 5). The right pulmonary artery is pulled out and upward, and the adventitia is removed. A Blalock or bulldog clamp is placed on the azygos vein, close to its outlet into the superior vena cava. Care is taken to compress this vessel also in the superior-inferior direction. The vein is then ligated and its distal end cut away. It is not advisable to remove the adventitia of the azygos vein, because of this vessel's fragility.

The vein should be cut askew so that its section will be as even as possible with the section of the pulmonary artery.

The anastomosis is then performed. Everting sutures are used for all types of vascular anastomosis (Fig. 6). The suture should be placed with accuracy, for it is very easy to tear the thin wall of the azygos vein, thus causing hemorrhage after heparinization.

The anesthetist, therefore, plays an im-

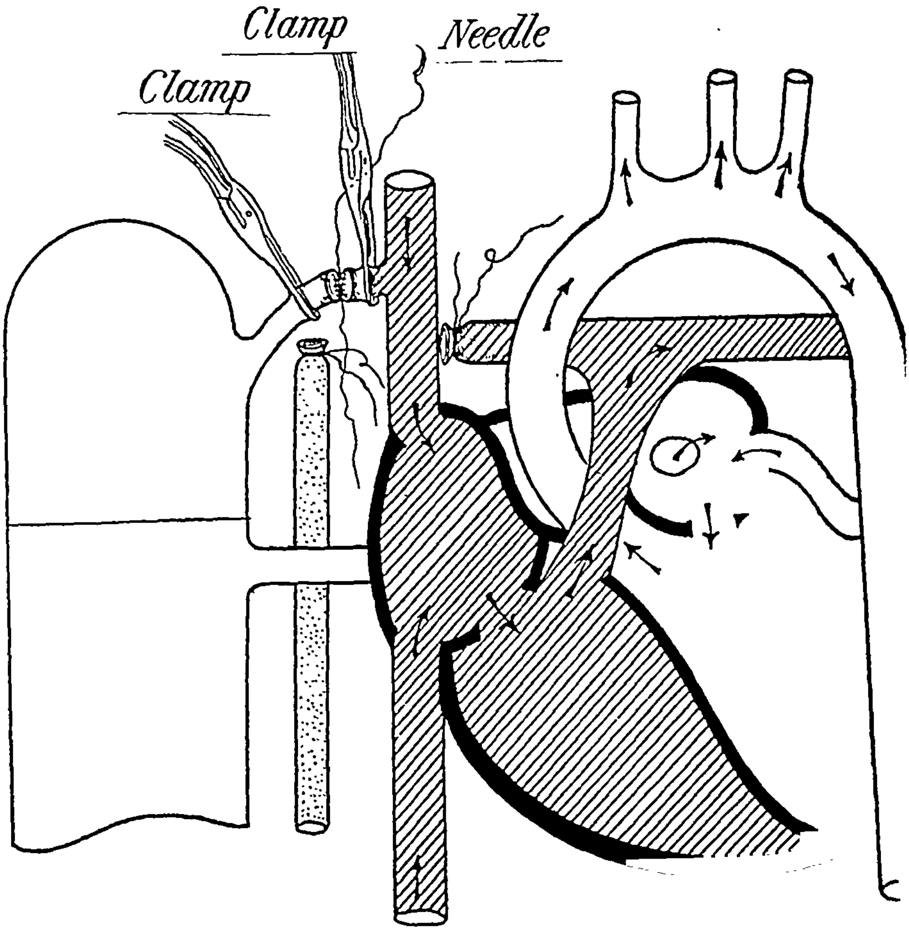

Fig. 6.—Third step in the operation; beginning of the anastomosis between the azygos vein and the right pulmonary artery.

portant role. Oxygenation should be perfect, without too much inflation of the lung on the operative side and yet with hindering the mediastinal "flottement" by insufficient oxygenation or an excess of carbon dioxide.

During the suturing of the anastomosis an assistant should frequently wash the opened vascular end with 1 per cent heparin in sodium chloride solution to hinder the drying of the intima and the formation of small thrombi.

If the anastomotic suturing is well done, there will be no hemorrhage from the anastomosis. If necessary, some U stitches may be added at the bleeding points.

The pericardium is now opened. The end of the superior vena cava is isolated under the end of the azygos vein and close to its outlet into the right auricle. A heavy silk ligature is placed slowly and carefully, with meticulous observation of cardiac function. If the dog has been given a sufficient dose of procaine hydrochloride, no arrhythmia and no fibrillation will be observed. The venous wall is then crushed and a second heavy silk suture placed under the first one *V* (Fig. 7).

The superior vena cava becomes moderately ectasic, and the jugular venous pressure rises from 10 to 15 cm. of water. The lobar branches of the right pulmonary artery appear filled and lightly pulsating; the blood pressure inside it is the same as that of the jugular vein. No difference is noticeable in the right pulmonary veins. The sublingual veins appear lightly ectasic. When the anesthetist inflates the right lung, its color is a normal pink. The pericardium is closed with a silk suture, and fibrin sponge or oxycel is placed around the anastomosis. When it has been made certain that there is no loss of blood, penicillin and sulfonamides are put into the right side of the thorax. The thoracic wall is then sutured, a rubber tube being left to aspirate the air from the pleural cavity after its closing.

This is the standard technic used by us. If necessary, the anastomosis between the superior vena cava and the right pulmonary artery may be end to side.

After the operation, we administer penicillin parenterally for seven or eight days. During the same period heparin is given in the following doses first and second days, 100 mg twice daily, third to eighth day, 60 mg twice daily.

We are still studying the physiologic changes produced on dogs by this operation and expect to publish our results as soon as possible. At the time of writing the dogs seem normal and are lively and strong. Their affectivity and intelligence are also normal. As a result, we are encouraged to hope for the present and future resistance of the brain to the in-

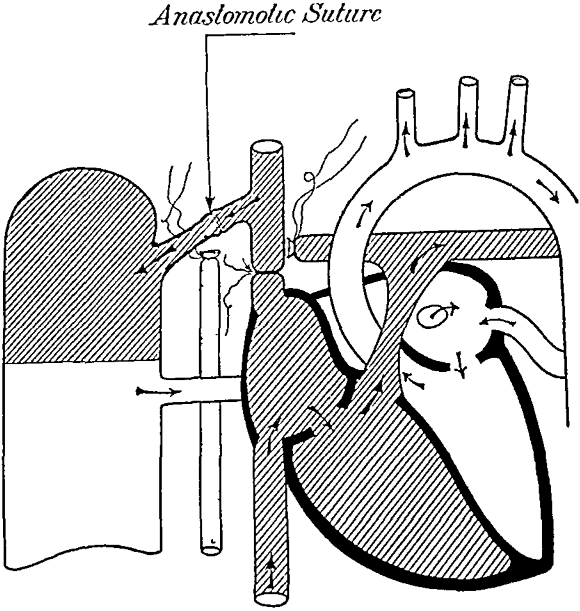

Fig. 7.—Fourth step in the operation the anastomosis is finished the bull dog clamps are taken off the azygos vein and the pulmonary artery. The superior vena cava is tied just short of its opening into the right auricle. Its blood passes into the right lung through the azygos vein and the right pulmonary artery and returns to the left side of the heart through the right pulmonary veins.

creased venous pressure certainly existing in the cerebral vascular area as in other areas of the upper half of the body.

SUMMARY

The authors describe a new anastomosis between the azygos vein and the pulmonary artery. These two vessels are divided, and an end-to-end or an end-to-side anastomosis is performed. The superior vena cava is freed and ligated in advance of its opening into the right auricle; thus the blood of the whole upper half of the body flows to the right lung for oxygenation. The blood then returns to the left side of the heart through the pulmonary veins, avoiding the right side of the heart. The blood flow is held up by a moderate increase of venous pressure in the upper half of the body, by thoracic suction and by the expansion and collapse of the breathing lungs. A pneumoangiograph taken of the right lung by way of the external jugular vein has proved that the speed of the blood flow remains almost the same. Autopsy performed on a dog which died on the eleventh postoperative day as a result of bilateral empyema and pericarditis has shown that the anastomosis was functioning perfectly. The anastomotic suture was completely covered by smooth endothelium. No evident alteration of the heart was to be found. In a number of dogs the operation was successful.

RÉSUMÉ

L'auteur décrit un nouveau procédé d'anastomose entre les veines azygos et l'artère pulmonaire. Les deux vaisseaux sont séparés et une anastomose bout à bout ou latérale terminale est pratiquée. La veine cave supérierure est libérée et ligaturée avant son entrée dans l'oreillette droite: de cette façon le sang de la région supérieure pénètre dans le poumon droit pour l'oxygénation. Le sang retourne ensuite dans les cavités gauches du coeur par les veines pulmonaires sans passer par le coeur droit. La circulation est maintenue par une élévation légère de la pression veineuse dans la partie supérieure du corps, une aspiration thoracique et le mouvement d'inspiration et d'expression du poumon. Une pneumoangiographie du poumon droit pratiquée dans la jugulaire externe a démontré que la vitesse de circulation du sang est constante. Une expérience sur un chien a prouvé que les anastomoses fonctionnaient bien. Un épithélium recouvrait les sutures. Il n'y avait aucune altération du coeur.

RIASSUNTO

Gli Autori descrivono una nuova anastomosi fra la vena azigos e l'arteria polmonare. I due vasi sono recisi ed un'anastomosi terminoterminale o terminolaterale viene eseguita. La vena cava superiore viene liberata ed allacciata al disopra del suo sbocco nell'auricola destra; Di tal modo il sangue dell'intera metà superiore del corpo viene diretto nel polmone destro per ossigenazione. Il sangue poi ritorna nel cuore sinistro attraverso le vene polmonari, evitando la porzione destra del cuore. La corrente sanguigna é sostenuta con un lieve aumento della pressione venosa nella metà superiore del corpo, a mezzo di aspirazione intratoracica e a mezzo di espansione e collasso dei polmoni durante le fasi respiratorie. La pneumoangiografia del polmone destro presa via giugulare esterna ha dimostrato che la velocità della corrente sanguigna rimane pressappoco uguale. L'autopsia eseguita in un cane deceduto nell'undicesimo giorni postoperatorio a seguito di empiema bilaterale e pericardite ha dimostrato che l'anastomosi funzionava perfettamente. La sutura anastomotica era completamente epitelizzata. Non furono rilevate evidenti alterazioni cardiache. In un certo numero di cani l'operazione é stata favorevole.

ZUSAMMENFASSUNG

Die Verfasser beschreiben eine neue Anastomose zwischen der Vena azygos und der Pulmonalarterie. Die beiden

Gefaesse werden durchschnitten und eine End-zu-End- oder End-zu-Seitanastomose wird ausgefuehrt. Die obere Hohlvene wird vor ihrer Einmuendung in den rechten Vorhof freigelegt und unterbunden; auf diese Weise fliesst das Blut der gesamten oberen Koerperhaelfte in die rechte Lunge zur Oxygenisierung. Dann kehrt das Blut unter Umgehung der rechten Seite des Herzens durch die Lungenvenen in das linke Herz zurueck. Der Blutstrom wird aufrechterhalten durch ein maessiges Ansteigen des venoesen Druckes in der oberen Koerperhaelfte, durch die Ansaugungskraft der Brusthoehle und durch Ausdehnung und Kollaps der atmenden Lungen. Ein auf dem Wege der aeusseren Jugularvene gewonnenes Pneumoangiogramm der rechten Lunge beweist, dass die Geschwindigkeit des Blutstromes fast unveraendert bleibt. Die Obduktion eines am elften Tage nach der Operation an einem beiderseitigen Empyem und Perikarditis eingegangenen Hundes zeigte ein einwandfreies Funktionieren der Anastomose. Die Naht der Anastomose war voellig von glattem Epithel gedeckt. Das Herz zeigte keine Veraenderung. An einer Reihe von Hunden war die Operation erfolgreich.

RESUMEN

Se describe una nueva anastomosis entre la vena acigos y la arteria pulmona. Se dividen estos dos vasos y se efectúa una anastomosis términoterminal o una términolateral. Se libera y liga de antemano la vena cava superior antes de su desembocadura en la aurícula derecha; en consecuencia la sangre de la mitad superior completa del cuerpo fluye al pulmón derecho para oxigenación. Entonces, la sangre retorna al corazón izquierdo por las venas pulmonares, evitando el corazón derecho. Se mantiene la corriente sanguínea por un moderado aumento de la presión venosa en la mitad superior del cuerpo, mediante succión torácica y expansión y colapso de los pulmones respirando. Se ha probado por pneumografía del pulmón derecho, obtenida a través de la yugular externa, que la velocidad de la corriente sanguínea permanece casi la misma. La autopsia de un perro muerto al undécimo día postoperatorio por empiema bilateral y pericarditis mostró que el funcionamiento de la anastomosis era perfecto. Sutura anastomósica cubierta completamente de epitelio liso. Ninguna alteración cardíaca evidente. Operación satisfactoria en numerosos perros.

SUMÁRIO

Os autôres descrevem uma nova anastomóse entre a veia aztgos e a artéria pulmonar. Esses dois vasos são divididos e uma anastomose termino-terminal ou termino-lateral é executada. A veia cava superior é liberada e ligada antes de sua abertura na auricula direita; assim o sanque de toda a metade superior do carpo cárre para o pulmão direito para oxigenação. O sanque vólta então ao lado esquerdo do corcação, atravéz das veias pulmonares, ladeando o lado direito do coracão. O fluxo sanguines é mantido por um moderado aumento da pressão venósa na metade superior do corpo, pela succão toracica e pela expansão e colapso dos pulmões em atividade. Uma pneumoangiografia tomada do pulmão direito por meio da veia jugular externa provou que a velocidade do fluxo sanguineo permanece a mesma. A autopsia praticada em um cachõrro que morreu no decimo primeiro dia como resultado de um empiema bilateral e pericardite demonstrou que a anastomóse estava funcionando perfeitamente. A sutura anastomótica estava completamente coberta por epitélio liso. Nenhuma alteracão evidente do coração era de se esperar fôsse encontrada. Em certo numero de cães a operação foi coroada de sucess.

Cardioesophageal Surgery

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IN recent years great advances have been made in surgical treatment of the esophagus and the cardiac portion of the stomach. This region long suffered from surgical neglect because of the difficulties inherent in surgical approach and the high mortality formerly associated with operative procedures therein. It is small wonder, therefore, that although the first successful operation for removal of cancer of the thoracic portion of the esophagus was performed by Torek[1] in 1913, there was little notable progress in this field until 1938, when Adams and Phemister[2] reported the first successful resection of the esophagus with esophagogastric anastomosis performed by the thoracic route. Advancement in anesthesiology and improvements in surgical care and technic have resulted in such rapid progress in the last few years that already operations on the esophagus and the cardiac portion of the stomach are a matter of routine in many clinics. It is the purpose of this paper to record my experience and that of my co-workers with surgery of the cardioesophageal region.

Diagnosis.—The commonest lesion of this part that requires surgical intervention is carcinoma. So much depends on the early diagnosis of this disease that a few words about diagnosis and mistakes likely to be made will not be out of place. Three types of errors have occurred in my experience:

1. Carcinoma of the lower end of the esophagus has often been mistaken for cardiospasm. Although the roentgenographic features of cardiospasm and cancer are usually quite distinct, occasionally a carcinomatous stricture at this region may resemble cardiospasm; it may even respond for a while to antispasmodic treatment. This mistake can be avoided only by questioning a diagnosis of cardiospasm in all patients over the age of 45, and insisting on esophagoscopic examination, for these and for all patients with a history of "spasm" of short duration.

2. Carcinoma of the cardiac portion of the stomach has trapped many a physician and roentgenologist. First, the patient has some dysphagia. The roentgen features are those of cardiospasm. The esophagoscope reveals a spastic condition of the cardiac sphincter. The patient is treated as for cardiospasm. He returns later with advanced carcinoma invading the esophagus from the stomach. Second, the patient has no dysphagia, but has anemia, loss of appetite and progressive loss of weight. A barium meal study is done and no abnormality is detected in the stomach. He is treated for anemia until time discovers an advanced carcinoma. Third, the patient complains of pain in the retrosternal or pectoral region. There is no dysphagia. There may be anorexia and progressive loss of weight. He may go to the cardiologist, or after a gastric lesion is excluded by a barium meal he may be treated for chronic cholecytitis, flatulence, etc., until too late. These mistakes are made because the roentgenologist who is prepared to discover a lesion in the distal part of the stomach is not always alert to uncover a lesion in the cardiac and fundic regions of that organ. More careful study of the gastric gas bubble and careful filling of this part with barium in all cases in which a barium meal study is undertaken by the roentgenologist would prevent these mistakes.

3. Sometimes a very early lesion in the esophagus may produce dysphagia but may not be demonstrable by roentgen studies; patients with such lesions are often passed as normal after barium

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fluoroscopic study and return later with advanced carcinoma. It is necessary to insist on an esophagoscopic examination in all cases of persistent dysphagia, even if the barium swallow shows no lesion. In this way we discover at least 2 cancers of the esophagus every year in patients who have been quite correctly passed as normal by the roentgenologist.

Another mistake that can be made is illustrated by the following curious experience. A man aged 45 years was referred to us with a diagnosis of carcinoma of the lower end of the esophagus. Screening during a barium swallow revealed an obstruction and irregularity of the barium column at that level, which led the roentgenologist to confirm the diagnosis (Fig. 1). Esophagoscopic study, however, disclosed a metallic foreign body. A plain skiagram without barium clearly outlined an image of the Hindu god Dattatraya (Fig. 2). It was only after this discovery that the patient remembered having swallowed the image in a fit of insanity he had passed through several months before. He had forced the image down his throat and proclaimed to the world that he had swallowed God. Nobody believed him. When he recovered from his mental ailment he had completely forgotten about the incident. The brass image (Fig. 3) was removed by thoracotomy and incision of the esophagus; the esophageal wound was sutured in two layers and the chest closed with drainage. His recovery was uncomplicated, and he was well two years later except for a mild stricture.

Obstruction caused by foreign bodies and simulating cancer is not a very rare experience. Several cases have been recorded of dentures swallowed unconsciously during sleep, only to be discovered several months later, after investigations for dysphagia had been instituted.

It is necessary to emphasize that all foreign bodies in the thoracic portion of the esophagus, if they have sharp or angular edges, should be removed by direct incision. Fatalities have occurred,

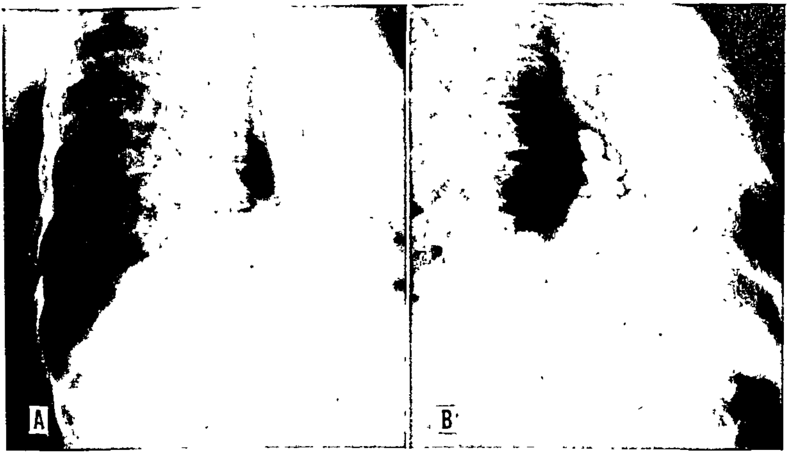

Fig. 1.—*A*, skiagram taken after ingestion of barium. Obstruction and irregularity were observed at lower end of esophagus, which on fluoroscopic examination was mistaken for carcinoma; outline of foreign body is visible on skiagram. *B*, skiagram of chest in oblique position, showing metal figure in esophagus.

though usually they are not reported, after attempts to remove dental plates through the esophagoscope, causing hemorrhage or mediastinitis.

Cardiospasm.—In the majority of cases, cardiospasm can be successfully treated if proper use of the hydrostatic dilator is carried out. However, there are some patients who do not respond or relapse frequently, and for these surgical measures offer a successful method of treatment. Cardiospasm of long duration or associated with marked dilatation, tortuosity and elongation of the esophagus is not suitable for dilatation, and should primarily be treated surgically.

Three procedures have been tried by us: Esophagogastrostomy, cardioplasty and cardiomyotomy, in chronologic order. We have come to the conclusion that cardiomyotomy is the simplest and best rocedure. Esophagogastrostomy is suitble for patients in whom the esophagus s much dilated and elongated (so-called mega-esophagus) and a pouch of esophagus hangs down below the level of the constriction. Both this operation and cardioplasty (longitudinal incision and transverse suture) take more time and involve opening the stomach and the infected esophageal lumen. Cardiomyotomy can be quickly and aseptically performed. The operation consists in incising the muscle coat longitudinally after the manner of the Ramstedt operation for pyloric stenosis in infants. We prefer the transthoracic route. The diaphragm must be opened and the wound continued into the hiatus. It is important that the longitudinal incision over the constriction should go through all the musculature right up to but not through the mucosa, and that the incision should go up for at least 2 inches (5 cm.) over the dilated esophagus and down for the same distance over the stomach. Contrary to what is usually described in textbooks, I have found in all the 5 cases operated on that the constriction in the esophagus started about 1½ inches (3.2 cm.) above the hiatus, at which point the dilated esophagus suddenly tapered to the size of the little finger and continued thus for about 2 inches (5 cm.) to the stomach. In these 5 cases there was no mortality. Except for the first patient who underwent esophagogastrostomy and who has slight discomfort on swallowing, a perfect result was obtained in all instances.

Cardioesophageal Carcinoma.—There is only one curative treatment for carcinoma of the cardioesophageal area, and that is operative excision. That irradiation is futile has been proved conclusively by the experience of clinics all over the world.[3] Surgical intervention, therefore, should be offered to all patients who are fit for operation.

In our early cases two-stage operations were performed. Preliminary exploration of the abdomen was done to establish operability from that aspect, and a temporary jejunostomy was established. The jejunostomy served the dual purpose of feeding the patient preparatory to the major procedure, and maintaining nutrition and nitrogen balance in the immediate postoperative period when food was withheld by mouth. I was soon dissatisfied with this two-stage approach, for the following three reasons: 1. Many patients continued to deteriorate in general condition in spite of adequate jejunostomy feedings. 2. Incidental postoperative complications sometimes delayed the second stage indefinitely. 3. In many cases, at the second stage the thoracotomy revealed an inoperable lesion in the thorax; the chest had to be closed and a gastrostomy established and the jejunostomy allowed to close. This meant waste of time and valuable bed space.

Two-stage operations were therefore given up in favor of a one-stage procedure. The abdomen was first explored through an epigastric incision, which was closed as soon as operability was established from the abdominal aspect. The patient was then turned over on his right side and a thoracotomy was performed for exploration and excision. It was a short step from this to the abdominothoracic exposure popularized by Garlock.[4] The patient is placed in the right lateral position for thoracotomy. The table is first tilted toward the left to expose the epigastrium. A transverse incision is made in this area, sufficient to allow palpation of the liver and the paracardiac region. The incision is then carried across the costal margin into the seventh or eighth intercostal space and the chest opened. The costal cartilage is cut across in line with the incision and the diaphragm incised in the same line, so that when the incision is completed there is one continuous abdominothoracic wound which gives excellent exposure and access to the viscera in that region. However, the incision has certain drawbacks, which began to reveal themselves after we had used it a few times. Closure of the abdominothoracic wound takes considerable time, a distinct disadvantage in a difficult case when the operation has been more prolonged than usual and a rapid closure is required. We have also found some difficulty in approximating the costal margin accurately; there is always a tendency to overriding, and in some cases the costal cartilage has necrosed and led to an annoyingly persistent sinus.

For these reasons, in the last 2 cases I have used the purely thoracic approach after a preliminary abdominal exploration through a small vertical epigastric incision, which is quickly closed. The seventh or eighth rib is resected, and an exposure as good as the abdominothoracic is obtained if one or two ribs above or below the resected one are cut across behind and the intercostal vascular bundles ligated and severed. This wound can be rapidly closed, and trouble at the costal cartilage margin is avoided.

Space is not sufficient to discuss the details of technic of esophageal resection; therefore, only the salient features of the operation and the postoperative care will be touched upon.

Anesthesia.—The intratracheal carbon dioxide absorption technic with cyclopropane and ether is used. After the pleura is opened the anesthetist restors to controlled respiration.

Resection and Anastomosis.—The mediastinal pleura is incised to the right of the aorta; the esophagus is exposed, the tumor palpated, and the patient's operability assessed. In the early stages the tumor-bearing esophagus is easily isolated, but in most cases a fair amount of active dissection must be carried out to free the esophagus. A prolonged dissection to separate a markedly adherent esophagus is hardly justified, as experience shows that in these cases recurrence is the rule.

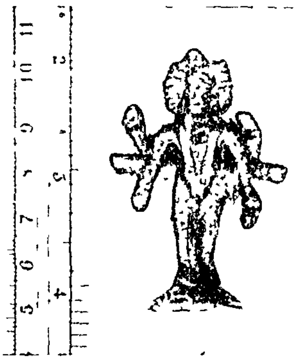

Fig. 2.—Photograph of brass image of Hindu god Dattatraya, removed from esophagus by thoracotomy.

In lesions at the hiatus it is advisable to leave a ring of diaphragmatic tissue around the esophagus when the diaphragm is incised and the stomach delivered into the thorax. The short gastric arteries in the gastrosplenic ligament are ligated along the upper third of the greater curvature, the right gastroepiploic being strictly preserved. The left gastric artery is then tied at its origin, care being taken to avoid ligating the celiac axis instead. All lymph nodes around the artery and at the superior border of the pancreas are swept up with the artery. With the ligation of the left gastric and short gastric arteries, the stomach can easily be displaced into the thorax, but in an occasional case it may be necessary to mobilize the stomach further, and even the duodenum, to prevent tension on a high anastomosis or kinking of the bile duct. After the tumor and the stomach are mobilized the stomach is severed. A dePetz clamp is preferred because it crushes and seals the cut edges with clips simultaneously and so saves time in a lengthy operation. As much of the fundus as possible should be preserved to supply an elongated gastric stump to reach well up into the chest. This is anchored to the posterior surface of the esophagus a little above the proposed line of section. It is more difficult to place these posterior sutures after the esophagus is sectioned, because the esophagus shrinks upward to some extent after the pull on the tumor-bearing segment is gone. Clamps for closing or holding the esophageal stump are not advisable because they may damage the precarious blood supply of the organ. The esophagus should be sectioned at least 2 inches (5 cm.) above the palpable upper limit of the disease, as submucous extensions of tumor are common. When adherence to this principle would involve leaving too short a stump for an infra-aortic anastomosis it is permissible to sever the esophagus a little above the tumor, because a supra-aortic anastomosis carries with it a definitely higher mortality rate.

After a rubber-covered clamp is placed on the stomach to prevent leakage, an incision $1\frac{1}{2}$ inches in length is made opposite the cut end of the esophagus that has already been anchored to the anterior wall of the stomach. Interrupted cotton through-and-through sutures are placed close together all round, uniting the esophageal and gastric stomas. These sutures should be meticulously applied; on them depends the integrity of the suture line, there being no serous coat to the esophagus to seal the junction. A few transverse mattress sutures are used to bring the stomach well over the suture line. Vertical sutures do not hold on the longitudinal loose bundles of esophageal muscle. A graft of omentum is placed on the anterior aspect of the anastomosis for added security. The stomach is then anchored to the pulmonary ligament and the mediastinal pleura so as to relieve any tension on the suture line. In my own cases I have not anchored the stomach to the edges of the diaphragmatic wound except in the first case. As we do not crush the phrenic nerve to paralyse the diaphragm temporarily because we believe it might interfere with early and complete expansion of the lung, I am not in favor of attaching the stomach to the active diaphragm. There is risk of undue pull on the anastomosis with every diaphragmatic movement. If the diaphragm is snugly closed around the stomach there is little danger of herniation of abdominal contents. The thorax is closed, with drainage.

Postoperative Care.—The function of the drainage tube is to insure early lung expansion of the lungs and later to provide a channel to the exterior in case there is leakage at the anastomosis. To secure early lung expansion the tube is connected to a continuous suction apparatus of the Wangensteen type for the first twenty-four hours. The tube is usually removed on the sixth day.

We have now given up the indwelling gastric tube passed through the nose. To avoid frequent blocking the tube has to be large; it causes annoyance to most patients, may cause pressure necrosis at the anastomosis and, in our experience, tends to induce respiratory complications. After a forty-eight-hour period of starvation, during which the fluid and electrolyte needs of the patient are satisfied by parenteral infusions, the patient is allowed to take small quantities of nourishing fluids by mouth at hourly intervals. These help in washing down mucus and clots that adhere to the suture line and are potential sources of local infection. Soft solid diet is started on the sixth day and solid nongritty food from the tenth day.

The patients experience no difficulty in swallowing after the operation (Figs. 4 and 5), but a certain degree of anorexia and a sense of fullness after meals persist

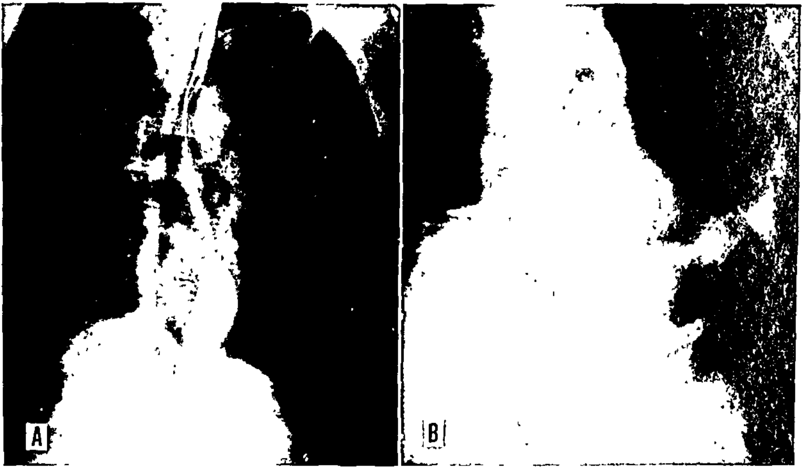

Fig. 3.—Skiagrams taken during ingestion of barium, showing esophagogastric anastomosis in thorax. Part of stomach is seen in thorax. Below and behind stoma are seen metal clips of de Petz clamp used to crush and suture stomach.

for some months. The absence of a sphincter at the anastomosis permits gastric contents to flow into the esophagus and occasionally regurgitate into the mouth if the patient lies down after a meal.

Clinical Material.—Since 1945 there have been 23 esophageal resections performed at this hospital. Six of these were resections of the Torek type, with the esophageal stump brought out into the neck. Three patients survived the operation. Resection with anastomosis of the esophagus to the stomach in the thorax was done in 17 cases. Eight of the patients survived. Thus, of a total of 23 patients undergoing resection, 11 survived the operation and went home, giving a mortality rate of 52 per cent. This rate appears high because it includes our earlier cases. With increased experience the mortality has been considerably decreased. Since January 1950 seven resections with anastomosis have been done with 2 deaths, a mortality rate of 28 per cent. My personal series of esophageal resections consists of 8 (2 of the Torek type and 6 with anastomosis) with 2 deaths (mortality rate 25 per cent). One of the deaths occurred from shock twelve hours after the operation; the patient had undergone a supra-aortic anastomosis after prolonged dissection in an adherent neoplasm of the midesophagus. The second death was the result of a tension pneumothorax of the opposite pleural cavity in a patient with chronic bronchitis and emphysema apparently caused by a ruptured bulla of the lung.

A study of the cases reveals several interesting features:

1. Three of the 4 female patients in the group survived. The one who died had a supra-aortic anastomosis; death was due to cardiac failure thirty hours after operation. Women seem to stand the operation better than men.

2. The ages of the patients ranged from 30 to 73 years. Two patients aged 63 and 73 years respectively (ages which

correspond as regards vitality to 73 and 83 in Western countries) survived the operation without any shock. Advanced age, therefore, should not deter the surgeon.

3. Among the survivors were 3 patients who were considered comparatively poor surgical risks and were subjected to operation because the growths presented features unusually favorable for resection.

4. All except 3, who were found to have resectable tumors on exploration had symptoms of less than three months' duration. The maximum duration for a resectable tumor was five months.

5. The operating time was from two to five hours.

6. Postoperative complications: A severe degree of shock occurred in only 4 of the 23 patients, and all these 4 died from two to eighteen hours after the operation. There was no postoperative shock in 9 patients and a moderate degree of shock in 10.

Most of the deaths were the result of cardiac failure on the second, third or fourth day. This operation appears particularly taxing to the cardiac reserve, and the patient's cardiac status must be carefully assessed before operation. The mortality is higher among those in whom a supra-aortic anastomosis is performed.[5] In the 3 cases of resection and supra-aortic anastomosis in our series there were two deaths, 1 from shock and 1 from cardiac failure.

Results.—The ultimate results are difficult to assess, as so many of our patients have been recently operated upon. One patient has been alive and well for two and one-half years; 1 lived for the same period before succumbing, and 6 have been alive and able to swallow well for periods varying from three to ten months. One was alive and well for six months and then was lost sight of.

When one compares these results with the results of roentgen therapy[3a, c] the superiority of surgical treatment is obvious. With roentgen therapy 67 per cent of patients die within six months of the diagnosis,[3c] and 98 per cent die within one year. Of over 500 patients treated by irradiation at this hospital we have only 2 who have lived for more than five years and only 2 patients who survived for more than two years. With earlier diagnosis of cancer and increasing experience in the surgical handling of the cardioesophageal region, there is every reason to expect a lower mortality and a higher salvage rate in time to come.

SUMMARY

1. Three common mistakes are made in the diagnosis of cardioesophageal cancer. 1. It is mistaken for cardiospasm. 2. Cancer of the cardiac part of the stomach is missed by the roentgenologist, or is treated by the physician as anemia, angina pectories, cholecystitis, etc. Retrosternal pain is occasionally the first symptom and the only one for some weeks. 3. Early esophageal cancer may not show up on fluoroscopic barium studies; it may be discovered only by esophagoscopy. All these mistakes could be avoided if careful roentgen and esophagoscopic examinations were made of all patients with retrosternal or epigastric symptoms.

2. Rarely, a forgotten foreign body lodged in the esophagus may simulate cancer. These foreign bodies should be removed by thoracotomy, especially if they have sharp and angular surfaces.

3. The abdominothoracic incision is a very useful approach for cardioesophageal operations, though it has certain disadvantages.

4. The technic of cardioesophageal resection is discussed.

5. Twenty-three cases of esophageal resection performed since 1945 are recorded. There were 12 deaths. Seven resections have been done since January 1950, with 2 deaths.

6. With earlier diagnosis and increasing experience of cardioesophageal surgery the results will be better. Already results of surgical excision are superior to those roentgen therapy.

RÉSUMÉ

1 On fait habituellemente trois erreurs de diagnostique du cancer cardiooesophagien a savoir (a) une meprise avec un cardiospasme (b) le cancer du cardia n'est pas vu par le radiologiste ou est traite par le medecin comme de l'anemie, de l'angine, de la cholecystite La douleur retro sternale est quelquefois la preuve et le seul signe du debut, voire même pour quelques semaines (c) La fluoroscopie avec ingestion de baryum n'a pas de valeur de diagnostic, seule l'oesophagoscopie peut deceler la lesion Toutes ces erreurs grossieres pourraient être evitees de justesse si l'on se donnait la peine de pratiquer un examen radiologique sérieux et d'une a tous les patients presentant des douleurs retro sternales ou epigastriques

2 Un corps etranger de l'oesophage peut rarement simuler un cancer

3 L'incision thoraco-abdominale est tres utile dans la chirurgie oesophagienne

4 L'auteur en discutes es merites

5 Sur 23 cas rapportes, il y eut 12 morts

6 Les resultats devraient s'ameliorer au fur et a mesure que le diagnostic precoce se fera

ZUSAMMENFASSUNG

1 Drei bei der Diagnose des kardiooesophagealen Krebses haeufig vorkommende Fehler sind die folgenden

a Die Erkrankung wird faelschlich fuer einen Kardiospasmus gehalten

b Der Krebs der Kardia wird vom Roentgenologen uebersehen oder vom Arzt als Blutarmut, Angina pectoris, Gallenblasenentzuendung usw behandelt Schmerz hinter dem Brustbein ist manchmal fuer einige Wochen lang das erste und einzige Anzeichen der Erkrankung

c Es kommt vor, dass ein frueher Speiserohrenkrebs bei fluoroskopischer Kontrastmitteluntersuchung sich nicht darstellt und nur mit Hilfe der Oesophagoskopie entdeckt werden kann

Alle diese Fehler koennten vermieden werden, wenn saemtliche Kranke mit retrosternalen oder epigastrischen Symptomen sorgfaeltig roentgenologisch und oesophagoskopisch untersucht wuerden

2 In seltenen Faellen kann ein vergessener Fremdkoerper, der sich in der Speiseroehre festgesetzt hat, einen Krebs vortaeuschen Solche Fremdkoerper sollten mittels Thorakotomie entfernt werden, besonders wenn ihre Oberflaeche scharf und kantig ist

3 Der abdominothorakale Einschnitt stellt einen brauchbaren Zugangsweg in der kardiooesophagealen Chirurgie dar, hat aber auch gewisse Nachteile

4 Die Technik der kardiooesophagealen Resektion wird eroertert

5 23 Faelle von Oesophagusresektion, die seit 1945 ausgefuehrt wurden, werden aufgezaehlt Darunter befanden sich 12 Todesfaelle 7 Resektionen wurden seit Januar 1950 ausgefuehrt, darunter 2 Todesfaelle

6 Es ist anzunehmen, dass mit Hilfe frueherer Diagnose und mit wachsender Erfahrung auf dem Gebiete der kardiooesophagealen Chirurgie sich bessere Resultate einstellen Schon heute sind die Ergebnisse der Chirurgie denen der Strahlenbehandlung ueberlegen

RESUMEN

1 Se cometen tres errores comunes en el diagnostico del cancer cardioesofageo a) confundirlo con el cardioespasmo, (b) omision por el rontgenologo del cancer cardiogastrico, o su tratamiento por el medico como anemia, angina de pecho, colecistitis, etc, siendo que el dolor retroesternal es el primero y unico sintoma de esta lesion por algunas semanas, (c) el cancer esofagoiscopio no puede evidenciarse rontgenoscópicamente, solo la esofagoscopia puede descubrirlo Todos esos errores pueden evitarse si se hace un examen rontgenografico y esofagoscópico en todos los pacientes con sintomas epigastricos y retroesternales

2 Un cuerpo extraño olvidado y localizado en el esofago puede simular raramente cancer Estos [illegible]

deben retirarse por toracotomía, especialmente si tienen superficies angulosas y filosas.

3. La incisión abdominotorácica es una vía muy útil para la cirugía cardioesofágica. Sin embargo, tiene ciertas desventajas.

4. Se discute la técnica de la resección cardioesofágica.

5. Se revisan desde 1945 veintitrés casos de resección esofágica. Hubieron doce decesos. Desde enero de 1950 se hicieron siete resecciones con dos decesos.

6. Con diagnóstico más temprano y mayor experiencia en cirugía cardioesofágica los resultados serán mejores. Desde luego los resultados de la excisión quirúrgica son superiores a los de la röntgenoterapia.

RIASSUNTO

1. Tre errori vengono comunemente commessi nella diagnosi del cancro cardioesofageo: (a) Esso é scambiato per cardiospasmo; (b) Il cancro del cardias gastrico sfugge al radiologo, o é trattato dall'internista come anemia, angina pectoris, colecistite, etc. Il dolore retrosternale é talvolta il primo ed unico sintomo di questa lesione per alcune settimane; (c) Gli esami radioscopici possono non dimostrare un cancro esofageo in stadio precoce che può essere scoperto soltanto a mezzo dell'esofagoscopia. Tutti questi errori potrebbero essere evitati se accurati esami radiografici ed esofagoscopie fossero eseguiti in tutti i pazienti con sintomatologia retrosternale o epigastrica.

2. Raramente un negletto corpo estraneo allogato nell'esofago può simulare un cancro. Questi corpi estranei dovrebbero essere rimossi con toracotomia specialmente se a superfici acute e taglienti.

3. L'incisione toraco-addominale é la più utile per la chirurgia cardioesofagea, però presenta alcuni svantaggi.

4. La tecnica della resezione cardioesofagea é discussa.

5. Sono menzionati 23 casi di resezioni esofagee eseguite a partire dal 1945. Vi furono 12 decessi. Sette resezioni sono state eseguite a partire dal Gennaio 1950 con due decessi.

6. Con la diagnosi precoce e la progredita esperienza della chirurgia cardioesofagea i risultati saranno migliori. Già i risultati del trattamento chirurgico sono superiori a quelli della radioterapia.

SUMÁRIO

1. Tres êrros comuns são feitos no diagnóstico do cancer cardio-esofagiano: (a) Confusão com o cardiospasmo; (b) Cancer da parte cardiaca do estomago, não visto pelo radiologista ou tratado pelo clinico como anemia, angina pectoris, cholecistite, etc. A dôr retro-esternal é ocasionalmente o primeiro e unico sintôma desta lesão por algumas semanas. (c) O cancer inicial do esofago póde não ser descobérto pelo exame fluoroscópico e ser somente descobérto pela esofagoscopia. Todos esses êrros podem ser evitados si um cuidadôso exame radiografico e esofagoscópico é feito em todos os pacientes que apresentem sintomas retro-esternais ou epigastricos.

2. Raramente um corpo extranho alojado no esofago póde simular cancer. Esse corpos extranhos devem ser removidos por toracotomia, especialmente si eles possuem superficies agúdas e angulares.

3. A incisão abdominotoracica é uma via de acésso muito util para a cirurgia cardio-esofagiana. Ela tem, contudo, certas desvantagens.

4. A tecnica da resecção cardio-esofagica é discutida.

5. Vinte tres casos de resecção esofagica executados desde 1945 são apresentados. Houve 12 mórtes. Sete resecções foram feitas desde Janeiro de 1950, com 2 mórtes.

6. Com diagnóstico precóce e crescente experiencia na cirurgia cardio-esofagiana os resultados sero melhóres. Os resultados da excisão cirurgicajá são atualmente superiores aos da radioterapia.

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The life in protoplasm is directed by a speck called a nucleus That is simply our name for the mystery which lives in that tiny space Far within the nucleus, all but invisible to the most searching gaze of science, is the mechanism that can direct the birth of a new cell

Such an intricate organism as this is a kind of separate creature It is adapted for special functions, and it can reproduce itself, as the one celled animals do It could no more happen into existence than a sunflower or a camel could It is an organized unit of life If I see a hawk flying overhead, I know that he was once in an egg and was born It is just as obvious that any cell was born It must have grown out of a cell, which had grown out of a previous cell, which had grown from a previous cell There cannot have been any gap in the series of descents since life began on the earth Every cell, in every particle of my body, is the offspring of some previous cell

Its origin cannot be any hit or miss process, a new cell cannot just branch off somehow Even a beet sugar factory that man makes—a clumsy pile of apparatus for doing the simplest sort of chemical work—has to be designed by an architect with studied care There must be complete blue print plans, an engineer s care to have foundations solid, a builder s minute pains to have walls kept plumb and courses of brick level, expert work to make steel girders exact, expert manufacture of vats and engines, high technical skill to furnish spectroscopes and chemical reagents If so lumbering an institution as a man made factory requires all this provision, much more will the creating of so intricate an organism as a living cell

The specifications for a future cell lie in the nucleus When this receives the impulse to reproduce, its mechanism is set to work, and it operates its multitude of minute parts with an accuracy that is awesome to think of So small is the space within the nucleus and so dim are the outlines of operations that no one scientist could ever have made out the details of that workroom Even within the nucleus all the complexities of a future organism are arranged for in only a portion of the available space—that is in the chromosomes

The mind cannot begin to comprehend such close packing of forces it quits exclaiming about marvels or unspeakable mysteries because any words of wonder fall so far short of what we feel —*Henshaw Ward*

Meckel's Diverticulum

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OMAHA

THE following paper is based on a survey of some 118,324 patients who were admitted to Creighton Memorial St. Joseph's Hospital, Omaha, Nebraska from 1941 through 1950. Thirty-one cases are herein reported, 5 of them in detail.

History.—According to Lichtenstein,[1] Hildamus (1598) was probably the first to observe this diverticulum. Lavater[2] reported it in 1671, Ruysch[3] in 1707 and Morgagni[4] in 1769. Littre[5] reported a diverticulum in a hernia in 1742. However, Meckel[6] was the first to publish an adequate description of this anomaly and to explain its embryologic background. He was the first to associate Meckel's diverticulum with the omphalomesenteric duct.

Incidence.—The diverticulum is found in about 2 per cent of autopsies. Christie[7] presented a pathologic study of 63 cases observed in 5,768 autopsies at Babies Hospital, an incidence of 1.1 per cent. Gray's Anatomy[8] gives an incidence of 2 per cent; Richardson,[9] of 1.5 per cent. This means that the busy practitioner probably sees in his office each week at least one patient who has a Meckel's diverticulum. However, in going over the records of 50,796 major surgical procedures performed from 1941 through 1950, we were able to find only 31 cases of Meckel's diverticulum.

The proportion of male to female patients is estimated at 3 to 1. In the cases to be reported, we found this condition present in 19 male and 12 female patients. No satisfactory explanation has ever been offered for this difference in sex incidence.

Anatomic Background.—Brennemann[10] has stated that there is no definite point at which the diverticulum is located on the ileum, for it has been found anywhere from 3 cm. to 3 M. from the ileocecal valve. Ordinarily it is situated 12 to 18 inches (30.4 to 45.7 cm.) from the valve in infants and up to 3 feet (91.4 cm.) from it in adults. The usual type of malformation consists of a diverticulum projecting from the free, or antimesenteric, border of the ileum and terminating as a blind pouch 1 to 3 cm. in length, with a broad base.

Embryologic Considerations.—The embryologic facts of pertinent interest may be briefly summarized: The omphalomesenteric duct, which connects the yolk sac with the intestine, begins to be obliterated in about the fifth week of fetal life. Obliteration is complete at about the seventh week. Various degrees of failure of obliteration lead to various disease entities. First, if the entire duct remains patent, a fecal fistulous opening at the umbilicus results. Second, when the distal end fails to close, intestinal mucosa is seen at the umbilicus where the secretions of the glandular elements form a discharge. Third, a retention cyst is formed if the midsection persists. Fourth, persistence of the proximal end may be seen as an outpouching of the intestinal tract, usually of the terminal portion of the ileum. This is what is commonly referred to as Meckel's diverticulum. It differs from other diverticula in that it contains all the layers of the intestinal wall. Occasionally associated with it is persistence of a fibrous stalk connecting its tip with the inner aspect of the anterior abdominal wall in the region of the umbilicus. This is the result of incomplete regression of the omphalomesenteric duct. The blood supply of the diverticulum usually comes

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From the Department of Surgery, Creighton University School of Medicine. Submitted for publication June 14, [illegible].

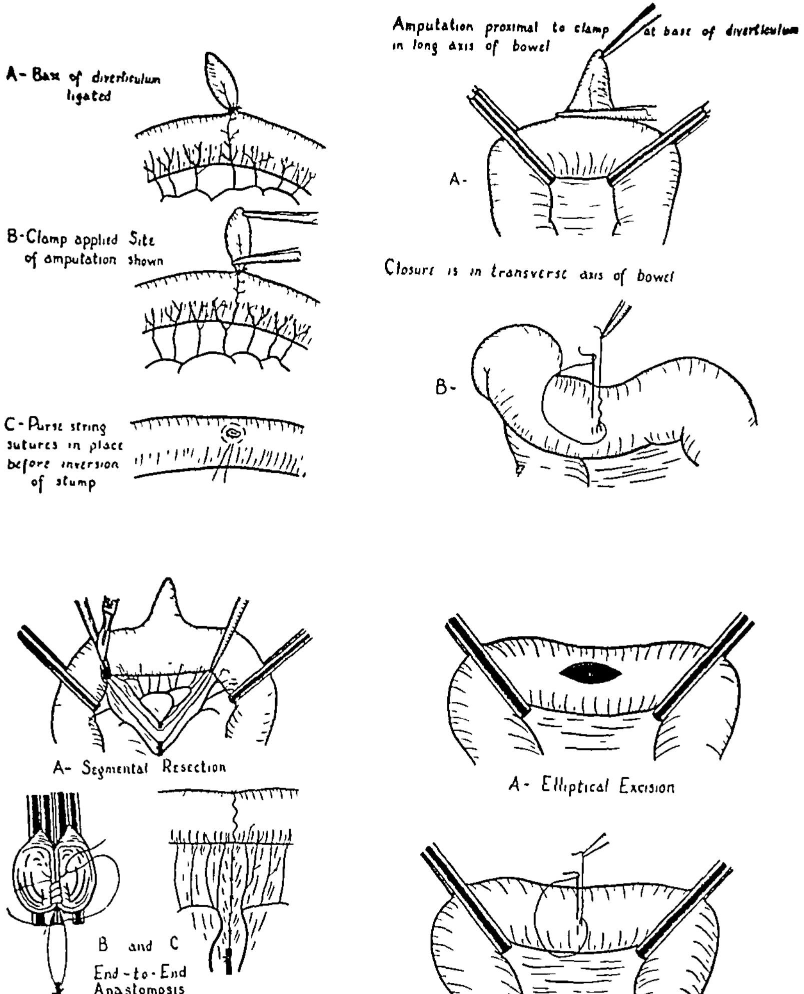
A- Base of diverticulum ligated
B-Clamp applied Site of amputation shown
C- Purse string sutures in place before inversion of stump
Amputation proximal to clamp at base of diverticulum in long axis of bowel
A-
Closure is in transverse axis of bowel
B-
A- Segmental Resection
B and C End-to-End Anastomosis
A- Elliptical Excision
B - Transverse Closure

Fig. 1.—Four operations for Meckel's diverticulum. (1) simple amputation and purse-string inversion of stump; (2) amputation with clamp in long axis of bowel, with transverse closure; (3) wide elliptic incision about base, with transverse closure; (4) resection of portion of ileum on either side of diverticulum with end-to-end anastomosis. Third and fourth procedures are those recommended by authors, owing to high incidence of gastric mucosa in diverticulum.

from its mesentery, which arises from the mesentery of the bowel, or it may come from the bowel wall itself in some instances.

Histologic Data. — Meckel's diverticulum contains all the coats of the bowel.

Heterotopic tissues may be present in the form of pancreatic, biliary, duodenal, ileal, colonic and gastric tissues (Wilson,[11] Salzer,[12] Zencker,[13] Hunt,[14] Curd,[15] and Greenblatt, Pund and Chaney[16]). Heterotopic tissues occur in approximately 25 per cent of cases. (Matt and Timpone[17]). The most common type of heterotopic tissue found in Meckel's diverticulum is gastric mucosa. It has been conclusively demonstrated that this gastric mucosa is capable of secreting hydrochloric acid and pepsin just as does the stomach (Dragstedt[18] and Waugh, Herrell, and Crumpacker[19]). It has been shown that the gastric mucosa in Meckel's diverticulum is acted on by the secretory hormone that stimulates secretion by the mucosa of the stomach, and that the secretion in the diverticulum occurs at the same time that it does in the stomach (Greenblatt, Pund, and Chaney[16]). It has also been shown that the mucosa of the intestine becomes progressively more sensitive to the irritating properties of hydrochloric acid and pepsin as the distance from the stomach increases (Matthews and Dragstedt[20]).

Classification.—The best classification is probably that of Greenblatt[16] and his co-workers:

1. Peptic ulcer type
   a. Gastric mucosa without ulceration
   b. Gastric mucosa with ulceration
   c. Ulceration with hemorrhage
   d. Ulceration without hemorrhage
2. Obstructive type
   a. Intussusception
   b. Volvulus
   c. Congenital bands and adhesions
   d. Contents of hernia
3. Diverticular type
   a. Simple acute inflammation
   b. Perforated and gangrenous
   c. Chronic inflammation
4. Umbilical type
   a. Fecal fistula
   b. Umbilical adenoma
   c. Prolapsed intestine through fistula
5. Tumor type
   a. Benign
   (1) Carcinoid
   (2) Enterocystoma
   (3) Adenoma
   (4) Mesodermal tumor
   b. Malignant
   (1) Carcinoma
   (2) Sarcoma
   c. Heterotopic
   (1) Pancreatic
   (2) Gastric
   (3) Biliary
   (4) Colonic
   (5) Jejunal
   (6) Duodenal, etc.
6. Incidental type
   a. Normal tissue of ileum

Pathologic Picture.—It has been estimated that 15 to 20 per cent of the diverticula are subject to pathologic changes causing symptoms (Faust[21]). In other words, for every 2 diverticula found diseased, there are 8 with no symptoms.

The pathologic changes accompanying Meckel's diverticulum depend to a large extent on the anatomic deformities present:

1. If a fistula persists, intestinal contents drain to the abdomen from the umbilicus (Rentschler[22]).

2. Abdominal obstruction results from rotation of the bowel on the long axis of the diverticulum or from coils of adjacent bowel becoming looped around the diverticulum when it is attached to the abdominal wall or to some point within the abdominal cavity.

3. The cystic type is thought to result from a rotation of the bowel in early fetal life, causing a spiral twist in the long axis of the vitellointestinal duct (Callander[23]).

4. The vitellointestinal duct is usually obliterated and absorbed during the seventh week of intra uterine development (Matt and Timpone[17]). However, it

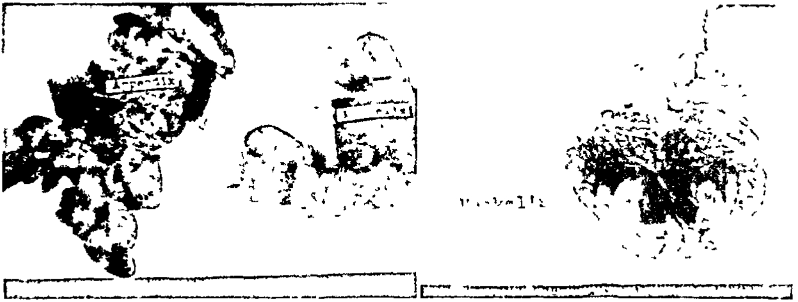

FIG. 2.—Photographs of resected specimens, after dissection. *Left*, gangrenous appendix and Meckel's diverticulum. *Right*, diverticulum opened, showing presence of gastric mucosa.

may fail to become absorbed so that a fibrous cord persists. Intestinal obstruction results from rotation of the bowel on the cord or from loops of bowel becoming twisted around the cord as described in item 2.

5. Inflammation occurs in the walls as it does in the appendix. The diverticulitis may be acute and severe, or mild and chronic; it may give rise to peritonitis.

6. Heterotopic tissue may be present in Meckel's diverticulum in the form of pancreatic, biliary, duodenal, ileal, colonic and gastric tissues (Wilson,[11] Salzer,[12] Zencker,[13] Hunt,[14] Curd,[15] and Greenblatt, Pund, and Chaney[16]).

7. Tumors occur in Meckel's diverticulum and they may be benign or malignant (Greenblatt, Pund, and Chaney,[16] Koucky and Beck,[24] Gray and Kernohan,[25] Weir,[26] Nygaard and Walters[27]).

8. Intussusception occurs from invagination of the diverticulum per se or from invagination due to the presence of a tumor (Harkins,[28] Bowen,[29] Gray and Kernohan[25]). The diverticulum may become the accidental reservoir of foreign bodies—such as: fishbones, pins, needles, grains of corn, fruit seeds, etc. (Womack and Siegert,[30] Mulsow,[31] and Giles and MacCarty[32]).

Symptoms.—The symptoms of Meckel's diverticulum are dependent upon the anatomic deformities.

1. If intestinal contents drain to the abdomen from the umbilicus, it is easy to see that a fistula persists.

2. Obstruction caused by Meckel's diverticulum does not differ essentially from intestinal obstruction or intussusception due to other causes. According to estimates of Halstead,[33] Meckel's diverticulum actually is responsible for intestinal obstruction in 6 per cent of cases. Harkins[28] in his extensive and thorough study of collected cases, found that 17 per cent of the diverticula that cause trouble do so by producing intussusception.

3. If the pathologic picture of Meckel's diverticulum is that of inflammation, the symptoms in the majority of cases resemble the various stages of appendicitis, for which it is most generally taken. Pain, when present, may be coliky and intermittent and is generally para-umbilical, as a rule to the right of the umbilicus, and may also manifest itself in the right iliac fossa. Nausea, vomiting, and constipation may or may not occur. Anorexia is more frequently observed. In many instances blood is observed in the stool, this at times being the only outstanding feature. The blood is usually dark but may be bright red and profuse. Fever, at least in the earlier stages, is rarely present.

4. Meckel's diverticulum with heterotopic tissue produces a [illegible] strikingly similar to the [illegible]

Age	Sex	Chief Complaint	Abdominal Signs	W.B.C.	Roentgen Signs	Provisional Diagnosis
38	M	Pain in RLQ for one week; nausea	RLQ tenderness +++ RLQ rigidity +++	10,800 Staff 25% Seg. 63%	None	Chronic appendicitis
28	F	Pain in RLQ for three weeks	RLQ tenderness + No rigidity	7,150 Staff 4% Seg. 55%	None	Recurrent appendicitis
21	F	Colicky pain in RLQ for one week; nausea; constipation	RLQ tenderness + No rigidity	11,050 Staff 10% Seg. 62%	None	Recurrent appendicitis
7	M	Pain in abdomen for one hour; projectile vomiting for ½ hour	RLQ tenderness ++++ RLQ rigidity ++++ Palpable mass 2 × 3 cm. in RLQ	16,750 Staff 19% Seg. 61%	None	Intussusception
14	M	Bloody stools for five months; 14 transfusions; pain in LLQ	Slight tenderness in left side of abdomen	5,500 Staff 9% Seg. 58%	Upper G. I. tract and colon normal	Polyposis of colon
32	F	Pain in RLQ intermittent for two years; nausea and vomiting; constipation	Slight tenderness in RLQ; no rigidity; no masses	9,650 Staff 3% Seg. 63%	None	Chronic appendicitis
35	F	Dysmenorrhea for one year; backache; dragging sensation in lower abdomen	Mass in lower midline, firm and slightly tender	8,200 Staff 6% Seg. 70%	None	Fibroid uterus
27	F	Pain in RLQ for two days; nausea and vomiting for two days	RLQ tenderness +++ RLQ rigidity ++++ Rebound phenomenon	14,750 Staff 7% Seg. 85%	None	Acute appendicitis
18	F	Pain in RLQ for three to four weeks; headache	RLQ tenderness + RLQ rigidity +	9,300 Staff 10% Seg. 63%	None	Subacute appendicitis
19	F	Pain in both lower quadrants	Slight tenderness in both lower quadrants; no rigidity	18,400 Staff 14% Seg. 72%	Chest normal	Subacute appendicitis
33	M	Adominal cramps; nausea and vomiting; chills	RLQ tenderness + RLQ rigidity + Distention ++	11,500 Staff 9% Seg. 58%	None	Acute appendicitis
9 mo.	M	Vomiting for four days; obstipation for three days; abdominal distention	No tenderness No rigidity Distention ++	9,650 Staff 10% Seg. 36%	Large amount of gas in bowel, extending as low as sigmoid colon	Intestinal obstruction
42	M	Pain to right of umbilicus	RLQ tenderness ++ RLQ rigidity +	8,950 Staff 7% Seg. 69%	None	Cholecystitis, recurrent
23	F	Pain in right side, low; nausea	RLQ tenderness ++ No rigidity	8,400 Staff 6% Seg. 61%	None	Acute appendicitis
50	F	Stomach trouble for 6 months; worse for past 6 weeks; vomiting everything	Tenderness – in upper abdomen	8,850 Staff 7% Seg. 52%	None	Gastric polyps
37	M	Pain in RLQ, ill for four hours; diarrhea	Tenderness ++ Rigidity ++	8,950 Staff 7% Seg. 53%	None	Acute recurrent appendicitis
46	M	Pain in LRQ; nausea; ill 24 hours	Tenderness +++ Rigidity +++	10,500 Seg. 67% Bands 13%	None	Acute appendicitis
9	M	Pain in RLQ; nausea, vomiting; ill 12 hours	Tenderness ++ Rigidity +++	10,350 Seg. 80% Bands 9%	None	Acute appendicitis
70	M	Fullness of epigastrium; anorexia; constipated; ill 3 days.	Tenderness over epigastrium; same distention; no rigidity or masses	5,800 Staff 10% Seg. 46%	Small bowel obstruction	Intestinal obstruction
28	M	Sharp pain in RLQ; radiating down rt. leg; abdomen hard as boil; ill 3 days; such attacks for 10 years, usually last only 3 hours	Slight tenderness in RLQ; no rebound	9,150 Staff 3% Seg. 51%	None	Recurrent appendicitis
[illegible]	M	Pain in RLQ 5 days; diarrhea in A.M. 3 days	Rebound tenderness RLQ; maximum tenderness 2 cm. above McBurney's point and lat.	15,700 Staff 6% Seg. 73%	None	Recurrent appendicitis

Cases in Detail

Operation	Final Diagnosis	Pathologic Report	Hospital Stay	Complication
Rt rectus incision purse string suture of base after amputation appendectomy	Chronic appendicitis Meckel s diverticulum	Fibrosed appendix Meckel s diverticulum	14 days	None
Rt rectus incision purse-string suture of base after amputation appendectomy	Recurrent appendicitis Meckel s diverticulum	Recurrent catarrhal appendicitis Meckel s diverticulum	8 days	None
Rt rectus incision appendectomy Connell suture of base after amputation	Recurrent appendicitis Meckel s diverticulum	Fibrosis of appendix Meckel s diverticulum	8 days	None
Rt rectus incision intussusception reduced Connell closure after removal of diverticulum appendectomy	Intussusception (Meckel s diverticulum) acute appendicitis	Hyperemia of Meckel s diverticulum acute catarrhal appendicitis	9 days	None
Left rectus incision diverticulum freed from bladder peritoneum amputation and Connell closure of ileum	Meckel s diverticulum containing gastric mucosa	Meckel s diverticulum with ulceration of gastric mucosa	51 days	None
Midline incision amputation of diverticulum with Connell closure of base cholecystectomy appendectomy	Meckel s diverticulum diverticulum of gallbladder chronic appendicitis	Meckel s diverticulum chronic cholecystitis chronic appendicitis	12 days	None
Pfannenstiel incision suprapubic hysterectomy left ovarian cyst enunclcated Connell (transverse clamp) to diverticulum	Fibroid uterus chronic salpingitis Meckel s diverticulum	Fibrosis of uterus Meckel s diverticulum chronic salpingitis unilateral corpus luteum cyst	7 days	None
McBurney s incision appendectomy Connell suture base of diverticulum	Acute catarrhal appendicitis inflamed Meckel s diverticulum	Acute catarrhal appendicitis Meckel s diverticulum	8 days	None
Rt rectus incision appendectomy Connell closure of base after amputation	Recurrent appendicitis Meckel s diverticulum	Fibroid appendix Meckel s diverticulum	6 days	None
Rt rectus incision appendectomy Connell closure of base after amputation	Subacute appendicitis Meckel s diverticulum	Recurrent catarrhal appendicitis Meckel s diverticulum	3 weeks	None
McBurney s incision appendectomy purse string suture after amputation	Acute appendicitis Meckel s diverticulum	Acute diffuse appendicitis Meckel s diverticulum	8 days	None
Rt rectus incision liberation of band causing obstruction elliptical excision Connell closure of base	Meckel s diverticulum	Subacute Meckel s diverticulum	11 days	None
High midline incision cholecystomy Connell closure after amputation	Chronic cholecystitis Meckel s diverticulum	Chronic cholecystitis Meckel s diverticulum	11 days	None
Rt rectus incision appendectomy purse-string suture after amputation	Acute appendicitis Meckel s diverticulum	Recurrent catarrhal appendicitis Meckel s diverticulum	8 days	None
Rt rectus incision appendectomy purse-string closure	Chronic appendicitis Meckel s diverticulum	Obliterated appendix Meckel s diverticulum	14 days	None
Rt rectus incision purse-string suture after amputation	Acute Meckel s diverticulum with recurrent appendicitis	Acute diverticulitis Meckel s diverticulum Fibrosis of appendix	11 days	None
Rt rectus incision band severed obstruction released Connell closure of base after amputation	Acute gangrenous appendicitis Meckel s diverticulitis with obstruction	Acute gangrenous appendix with peri appendicitis chronic Meckel s diverticulitis with aberrant gastric mucosa and extensive hemorrhage into wall and attached mesentery	7 days	None
Rt rectus incision purse string suture after amputation appendectomy	Bowel obstruction acute Meckel s diverticulum acute catarrhal appendicitis	Acute Meckel s diverticulum with band acute appendicitis	7 days	None
Rt rectus incision release of obstruction and resection of terminal ileum with side to side anastomosis	Small bowel obstruction due to Meckel s diverticulum	Obstructive band (Meckel s) and chronic organizing peri ileitis	30 days	Fecal fistula
Rt rectus incision removal of appendix and resection of Meckel s diverticulum (Connell)	Recurrent appendicitis Meckel s diverticulum	Acute catarrhal appendix subacute Meckel s diverticulum	7 days	None
McBurney s incision removed appendix and resected Meckel s diverticulum by clamping base sutured with one row continuous and one row interrupted	Acute appendicitis acute Meckel s diverticulum gangrene of omentum	Acute diffuse appendicitis diverticulum of small bowel with subacute inflammatory changes	9 days	None

Age	Sex	Chief Complaint	Abdominal Signs	W.B.C.	Roentgen Signs	Provisional Diagnosis
32	F	Dull intermittent pain in LLQ with superimposed periods of paroxysmal sharp stabbing pain in area (4 months); nausea and vomiting with attacks of pain; tenderness over LLQ; recent increasing pain and cramps at menstruation and passing of clots	Tender LLQ above iliac crest; no masses or rigidity	11,100 Staff 1% Seg. 50%	None	L. ovarian cyst; chronic P.I.D.; diabetes mellitus
24	M	Pain in rt. side; of two weeks' duration, intermittent; constipation	Slightly tender on deep palpation in RLQ	7,000 Staff 3% Seg. 63%	None	Subacute appendicitis
49	M	Recurrent pain in RLQ for two weeks; nausea and pain	RLQ tenderness +; no rebound tenderness	7,800 Staff 6% Seg. 49%	None	Recurrent appendicitis
22	F	Pain in RLQ; menstrual flow two weeks duration	RLQ tenderness ++ RLQ rigidity ++	14,450 Staff 3% Seg. 5%	None	Subacute appendicitis; ectopic pregnancy
43	M	Pain in right side five years	No distention, rigidity, or masses; tenderness RLQ on deep palpation	8,350 Stab 4% Seg. 47%	None	Chronic recurrent appendicitis
20	M	Pain in abdomen 24 hours; nausea and vomiting; previous attacks	Tenderness over McBurney's point	9,500 Stab 14% Seg. 59%	None	Acute appendicitis
7	M	Pain in RLQ; nausea and vomiting	Tenderness in abdomen RLQ; rigidity; abdominal distention	15,700 Staff 8% Seg. 80%	None	Acute appendicitis
79	F	Diarrhea; vomiting; Abd. distention; ill 3 days.	Tenderness LLQ; moderate distention	8,200 Stab 50% Seg. 38%	Possible small bowel obstruction	Intestinal obstruction
5	M	Drainage from abdomen; cramps; nausea and vomiting	RLQ tenderness; McBurney's scar (app.); incisional fistula	9,100 Staff 2% Seg. 61%	Opaque material in sinus show 25 × 35 mm. collective 5 cm. to rt. of midline at level of 5th L. vertebrae	Meckel's diverticulum; abdominal fistula
67	M	Pain in stomach for two days; vomiting; distention	Moderate tenderness in epigastrium; silent abdomen; no rigidity	7,900 Stab 48% Seg. 26%	Barium enema; Meckel's diverticulum	Paralytic ileus; Meckel's diverticulum

of gastroduodenal ulceration with its attending complications. Perhaps the most outstanding diagnostic criteria are melena and intestinal hemorrhage.

5. Clinically it is very difficult to make a diagnosis of tumor of Meckel's diverticulum or foreign body of the same before operation or necropsy. The most common presenting symptoms would lead to the impression of an acute pathologic lesion in the abdomen.

Diagnosis. — The correct preoperative diagnosis of Meckel's diverticulum is rarely made. Harbin[34] reported 1 correct diagnosis in 13 cases. We found the correct diagnosis was made but twice in the 31 cases reported. The symptoms vary according to the type of Meckel's diverticulum—obstructive, inflammatory, or the peptic ulcer type—and are not typical or characteristic. However, patients showing severe acute symptoms as in hemorrhage, volvulus, intussusception, gangrene and intestinal obstruction are readily recognized as having acute abdominal disease and in the vast majority of cases are well treated. Patients with chronic, intermittent, recurrent symptoms are, I believe, often poorly treated and even missed when intra-abdominal operations are performed.

Cases in Detail (Continued)

Operation	Final Diagnosis	Pathologic Report	Hospital Stay	Complications
Low midline incision appendix removed Meckel's diverticulum removed by clamping and 3 rows of sutures bilateral partial oophorectomy, Gilliam suspension	Endometriosis, generalized invading sigmoid rt ovarian cyst Meckel's diverticulum diabetes mellitus	Recurrent catarrhal appendicitis subacute diverticulum corpus luteum and follicular cysts of both ovaries	14 days	None
Rt rectus incision removal of appendix, resection of Meckel's diverticulum with transverse closure	Subacute appendicitis Meckel's diverticulum	Fibrosed obliterating appendix Meckel's diverticulum	6 days	None
Rt rectus incision removal of appendix resection of Meckel's diverticulum with transverse closure	Chronic obliterative appendix Meckel's diverticulum	Recurrent catarrhal appendix and Meckel's diverticulum	8 days	None
McBurney's incision salpingectomy appendectomy purse-string suture of Meckel's diverticulum	Ectopic pregnancy acute appendicitis Meckel's diverticulum	Disidual reaction with thinned fallopian tube right subacute salpingitis right Meckel's diverticulum fibrosed appendix	14 days	None
Davis incision appendectomy removal of diverticulum	Recurrent appendicitis, Meckel's diverticulum	Recurrent catarrhal appendicitis Meckel's diverticulum	8 days	None
Rt rectus incision appendectomy Meckel's diverticulum removed	Acute catarrhal appendicitis chronic Meckel's diverticulum	Acute catarrhal eppendicitis chronic Meckel's diverticulum	5 days	None
McBurney's incision Fibrous band attached to distal portion of Meckel's severed thereby freeing strangulated bowel Meckel's ligated twice at base and excess excised appendectomy	Perforated Meckel's diverticulum strangulation of intestines general peritonitis	Acute catarrhal eppendicitis Meckel's diverticulum	20 days	None
Rt rectus incision strangulation released resection of part of ileum iliotransverse colostomy	Strangulation of bowel with gangrene from Meckel's diverticulum	Acute gangrenous terminal ileum with acute Meckel's diverticulum	28 days	Expired
McBurney's incision resection of Meckel's diverticulum ligation at base	Meckel's diverticulum abdominal fistula	Chronic Meckel's diverticulum with sinus through abdominal wall gastric mucosa in Meckel's diverticulum	26 days	None
Rt rectus incision resection of ileum with Meckel's diverticulum and end to-end anastomosis	Subacute Meckel's diverticulum fibrosed appendix	Subacute Meckel's diverticulum fibrosed appendix	27 days	None

Clinically, abdominal pain, vomiting and intestinal bleeding are the most significant diagnostic criteria of Meckel's diverticulum.

Treatment.—Treatment is surgical. It must be directed toward relieving the symptoms produced by the diverticulum. If obstruction is present it must be relieved. If intussusception is present it must be reduced surgically. If a fistula is present, it must be closed. If the diverticulum is enclosed in a hernia sac, it must be reduced. All procedures carried out for the relief of symptoms caused by Meckel's diverticulum must include excision of the diverticulum. This may be done by: (1) simple amputation and purse-string inversion of the stump; (2) amputation with the clamp in the long axis of the bowel with closure in the transverse; or (3) wide elliptic incision about the base, with transverse closure; or (4) resection of a portion of the ileum on either side of the diverticulum with end-to-end anastomosis. The second surgical procedure is recommended over the first, as it will produce less chance of obstruction from stenosis of the lumen. However, the third and fourth procedures outlined are those recommended by the au[illegible]

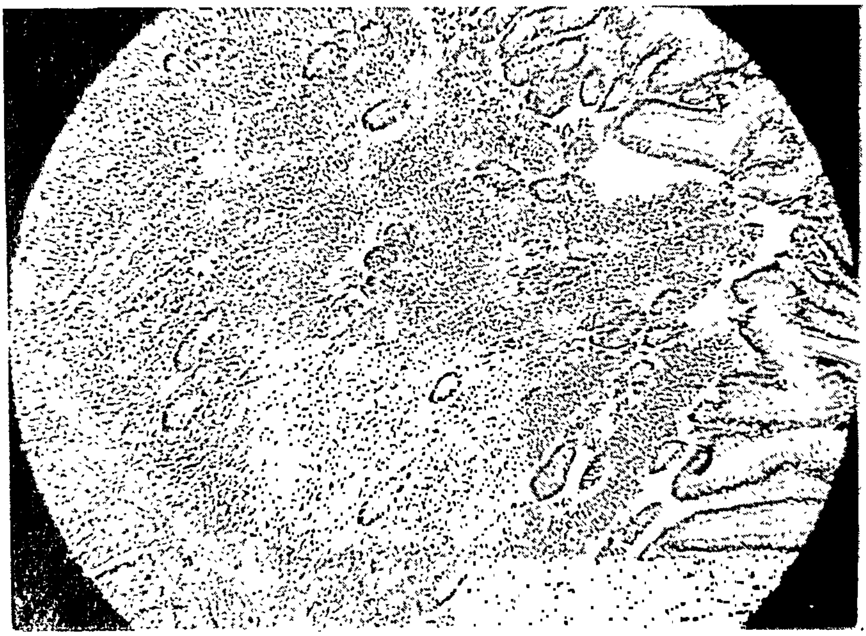

Fig. 3.—Photomicrograph showing gastric mucosa from diverticulum in Case 1.

the high incidence of gastric mucosa found in the diverticulum. They are particularly effective in those cases in which the base is exceptionally large. Matt and Timpone[17] and Wilson[11] stated the belief that the gastric mucosa frequently found in Meckel's diverticulum may extend to the walls of the ileum at the base of the diverticulum. It is felt that by the first two procedures some of this heterotopic tissue will be left in at the base of the diverticulum and may give rise to ulceration, perforation or hemorrhage. This obviously would not be the case if a wide elliptic incision about the base or a segmental resection and end-to-end anastomosis were done.

REPORT OF CASES

Case 1.—A 46-year-old white man entered the hospital on Dec. 30, 1950. The chief complaint on admission was pain in the lower right abdominal quadrant. The patient stated that the pain had begun on the previous afternoon. He felt nauseated at the time but did not vomit. The pain was generalized at first; later it centered in the lower right quadrant of the abdomen, with radiation into the upper right quadrant.

For several years he had complained of pain in the epigastrium coming on two to three hours after meals. Repeated roentgenograms showed no evidence of ulcer, but the patient had been following an ulcer regime.

Examination revealed him to be well developed and well nourished but apparently in acute distress. The temperature was 98.4 F., the pulse rate 84, and the respiratory rate 20. Marked generalized tenderness was present, with 3 plus tenderness and rigidity in the lower right quadrant of the abdomen. There were 10,500 leukocytes per cubic millimeter of blood, with 67 per cent segmental cells and 13 per cent band cells.

That evening the patient was taken to the operating table with a preoperative diagnosis of acute appendicitis. Spinal anesthesia was induced and the abdomen was opened through a lower right rectus incision. When the abdomen was entered, an acutely diseased, gangrenous appendix was observed, as well as a Meckel's diverticulum with an obstructing band attached to the terminal portion of the ileum. The appendix was removed in the usual non-purse-string inversion manner. The obstructing band was released, and the diverticulum was clamped at its base and removed and the opening closed with Connell No. 0 chromic sutures and reinforced with interrupted black silk. The abdomen was closed in the usual manner, and the patient was discharged on Jan 5, 1951

The pathologic diagnosis was acute gangrenous appendicitis with periappendicitis, chronic Meckel's diverticulitis with aberrant gastric mucosa, and extensive hemorrhage into the wall and the attached mesentery

Case 2—A 7-year-old white boy entered the hospital on Dec 18, 1943 The chief complaint on admission was severe pain in the abdomen and projectile vomiting The patient was outside playing marbles when he was seized with a sudden severe pain in the lower part of the abdomen which "doubled him up" His mother gave him an enema, but no relief was obtained Then he began to have projectile vomiting, which persisted for half an hour prior to admission

Examination revealed the child to be well developed and well nourished but apparently in acute distress The temperature was 99 6 F, the pulse rate 98 and the respiratory rate 26 Tenderness (3 plus) and rigidity (3 plus) were present in the lower right quadrant of the abdomen, with a palpable mass 2 by 3 cm There were 16,750 white cells per cubic millimeter of blood, with 61 per cent segmental cells and 19 per cent staff cells

Immediate operation was done, with a preoperative diagnosis of intussusception With the patient under general anesthesia, the abdomen was opened through a lower right rectus incision Entrance to the abdomen disclosed about 12 inches (30 4 cm) of ileum telescoped into the cecum After this had been reduced, a Meckel's diverticulum was found to be the initiator of the entire process The appendix appeared acutely inflamed, and there were some rather thick adhesions over the proximal portion of the appendix and over the cecum The appendix was removed in the usual non-purse string inversion manner The diverticulum was clamped and excised, and the base was closed with a Connell suture of dulox The patient made an uneventful recovery and was discharged on December 29 The pathologic diagnosis was hyperemia of Meckel's diverticulum and acute catarrhal appendicitis

Case 3—A 5-year-old white boy entered the hospital on June 12, 1947 The chief complaint on admission was a draining abdominal sinus Some three months before the patient had been operated on for appendicitis The wound had never healed, although he was hospitalized seven weeks at that time When he was dismissed there were three drainage sites, of which two had since closed The mother stated that the material was at times "puslike", at times clear and at other times bloody There had been two episodes of bleeding from the wound During the four days just prior to admission the patient had had abdominal cramps, nausea and vomiting and had expressed a desire to stay in bed

Examination revealed the child to be well developed and fairly well nourished, though in moderate discomfort The temperature was 99 4 F, the pulse rate 104 and the respiratory rate 24 The abdomen presented a McBurney scar with a central fistula draining seropurulent material, there was a 2 plus reaction for tenderness in the right lower quadrant, an area of erythema 5 cm in diameter was observed about the fistula The leukocyte count was 9,100, with 61 per cent segmental cells and 2 per cent staff cells Roentgenograms of the abdomen taken on June 19, after injection of opaque material into the draining sinus, showed a 25 by 35 mm col-

Fig 4—Roentgenogram of Meckel's diverticulum in [illegible] 3

lection of the opaque medium 5 cm. to the right of the midline, at the level of the fifth lumbar vertebra.

On July 1 reoperation was performed. With the patient under general anesthesia the old McBurney scar with its central fistula was removed. The fistulous tract was followed into the abdomen. It was found to originate from a Meckel's diverticulum about 30 cm. above the ileocecal valve. The diverticulum was tied with No. 1 chromic catgut at the base and excised. Closure was routine, and the patient was discharged on July 16. The pathologic diagnosis was chronic Meckel's diverticulitis with a sinus through the abdominal wall; also gastric mucosa in the Meckel's diverticulum.

Case 4.—A 14-year-old white boy entered the hospital on May 26, 1946. The chief complaint on admission was bloody stools since December 1945. The stools had been tarry, but there had been an associated streaking with fresh red blood. No pain had been associated with the bleeding. There was a doubtful history of trauma two weeks before the onset of the bleeding. The bleeding was so severe that 14 transfusions had been required up to the time of admission.

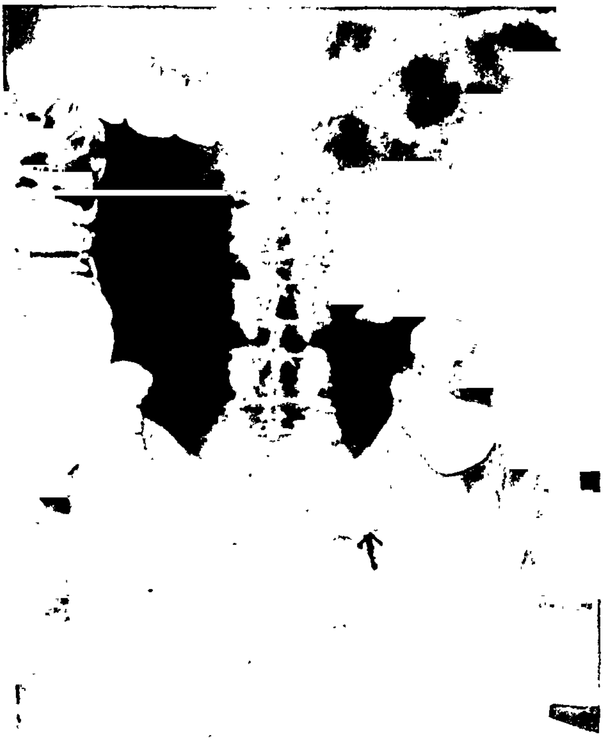

Fig. 5.—Roentgenogram taken in Case 5, showing a Meckel's diverticulum.

Examination revealed the boy to be asthenic, well nourished, and well developed, with no deformity and in no apparent acute distress. The temperature was 97.8 F., the pulse rate 88 and the respiratory rate 22. A grade III systolic murmur was present, heard best over the tricuspid area and radiating upward; a palpable thrill was heard. The red blood cell count was 2,810,000 per cubic millimeter, with 52 per cent hemoglobin. Roentgenograms of the gastrointestinal tract, both upper and lower, revealed no abnormality.

On June 20 operation was performed, with a preoperative diagnosis of melena. With the patient under general anesthesia the abdomen was opened through a lower left rectus incision. A large Meckel's diverticulum, containing a neoplasm with a diameter of 1.5 cm., was observed to be densely adherent to the bladder. The diverticulum was freed from the bladder, clamped at its base and amputated. The edges were approximated transversely (Connell suture, No. 0 chromic). An additional row of mattress sutures was then placed for reinforcement.

The pathologic diagnosis was Meckel's diverticulum with ulceration of the gastric mucosa.

Case 5.—A 67-year-old white man entered the hospital on July 23, 1950. The chief complaint on admission was gastric pain of two days' duration. On the day the pain began the patient had been nauseated and had vomited twice. The pain was steady, located in the "pit of the stomach", and did not radiate. There also seemed to be some distention of the abdomen with the pain.

Examination revealed the patient to be well developed and well nourished. He was apparently in acute distress. The temperature was 98 F., the pulse rate 68 and the respiratory rate 18. There was moderate epigastric tenderness and moderate distention were present. The abdomen was silent. The leukocyte count was 7,900, with 26 per cent segmental cells and 48 per cent staff cells. An electrocardiogram revealed no abnormality. Roentgenograms of the chest, stomach, esophagus, pylorus, duodenum and gallbladder also gave negative results. Roentgenograms of the colon revealed a Meckel's diverticulum.

On August 7 operation was performed, with a preoperative diagnosis of paralytic ileus and Meckel's diverticulitis. A general anesthetic was employed, and the abdomen was opened through a lower right rectus incision. A large mass about 3 x 3 cm. in diameter, covered with peritoneal fat, was included in the coil of the ileum about 19 cm. from the ileocecal junction. The mass was so large and its base so extreme that resection of the coil of the ileum including the Meckel's diverticulum was carried out, with end-to-end anastomosis. The appendix was removed in the usual non-purse-string inversion manner. The abdomen was closed routinely, and the patient was discharged on *August 26.*

The pathologic report was subacute Meckel's diverticulitis and fibrosed appendix.

SUMMARY AND CONCLUSIONS

1. The passage of blood by rectum, especially in children and in the presence of acute abdominal disease, should arouse suspicion of a Meckel's diverticulum.

2. Examination of the terminal portion of the ileum should, when possible, be routinely undertaken in abdominal operations.

3. In an abdominal procedure in which an adequate pathologic condition is not found to explain the clinical findings, Meckel's diverticulum should be ruled out.

4. The purse-string inversion technic after amputation is to be condemned. Although this is the simplest of the four procedures outlined, it also offers the highest probability of complications. This may be expressed in either obstruction from narrowing of the lumen or hemorrhage and perforation caused by leaving heterotopic tissue behind.

5. Resection of a portion of the ileum on either side of the diverticulum is the recommended treatment of choice, owing to the high incidence of heterotopic tissue. This may be carried out either by a wide elliptic incision about the base with Connell closure or by segmental resection of the loop of the ileum containing the diverticulum with end-to-end anastomosis. The latter technic is especially applicable to cases in which the base of the diverticulum is so large that any other choice would produce a stenotic bowel, as was the situation in the case diagnosed by roentgen examination.

RÉSUMÉ ET CONCLUSIONS

1. La possibilité d'un diverticule de Meckel doit être soupçonnée quand il y a du sang dans les selles surtout chez les patients qui présentent un abdomen aigu.

2. L'iléon terminal doit subir l'examen de routine.

3. On doit ignorer la possibilité du diverticule de Meckel si les constatations opératoires ne coincident pas avec les symptômes cliniques.

4. La suture en bourse après l'opération doit être proscrite. Même si cette méthode est la plus facile, elle est cependant celle qui donne le plus de complications dûes à une sténose de la lumière, une hémorragie ou une perforation par les ligatures.

5. On recommande de réséquer une portion de l'iléon à cause du tissu hétérogène. On peut faire une incision en ellipse de la base avec fermeture Connell ou réséquer un segment d'insertion ou retourner le diverticule en terminant par l'anastomose bout à bout. Cette dernière méthode s'applique surtout pour les grands diverticules où le danger de sténose est très grand, tel que dans le cas ici discuté.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

1. Rektale Blutungen—besonders bei Kindern und bei akuten Baucherkrankungen—sollten den Verdacht auf ein Meckelsches Divertikel erwecken.

2. Das distale Ende des Duenndarms sollte, wenn moeglich, regelmaessig bei allen Bauchoperationen untersucht werden.

3. Wenn bei einer Bauchoperation keine das klinische Bild erklaerenden pathologischen Befunde erhoben werden koennen, sollte das Bestehen ein Meckelschen Divertikels ausgeschlossen werden.

4. Die Einstuelpungstechnik mit Hilfe der Tabaksbeutelnaht nach Amputation

ist zu verwerfen. Obgleich diese Methode von den vier dargestellten die einfachste ist, so birgt sie doch gleichzeitig die hoechste Wahrscheinlichkeit für Das Aüfresen von Komplikationen in sich. Dies mag sich in einer Obstruktion als Folge der Verengung der Darmlichte oder in Blutung und Perforation als Folge zurueckgelassenen heterotopischen Gewebes ausdruecken.

5. Wegen des haeufigen Vorkommens heterotopischen Gewebes wird die Resektion eines Ileumabschnittes u beiden Seiten des Divertikels als die Behandlung der Wahl empfohlen. Dies kann entweder mittels eines weiten elliptischen Einschnitts ueber der Basis und Connel scher Schliessung oder mittels segmentaler Resektion der das Divertikel enthaltenden Duenndarmschlinge und End-zuEnd- Anastomose ausgefuehrt werden. Die letztbeschriebene Technik eignet sich besonders fuer solche Faelle, bei denen die Basis des Divertikels so gross ist, dass jede andere Methode eine Verengerung des Darmes hervorrufen wuerde, was in diesem durch die Roentgendiagnose bestaetigten Falle eintrat.

RESUMEN Y CONCLUSIONES

1. El paso de sangre por el recto, especialmente en niños y en presencia se enfermedad abdominal aguda, hará sospechar la existencia de un divertículo de Meckel.

2. Debe examinarse rutinariamente en lo posible el ileon terminal en las operaciones abdominales.

3. En una operación abdominal en que no se encuentre un estado patológico adecuado para explicar los datos clínicos, debe aclararse la existencia de un divertículo de Meckel.

4. Debe condenarse la técnica de inversión en bolsa de tabaco después de amputación. Aunque es el más sencillo de los cuatro procedimientos señalados, ofrece también la máxima probabilidad de complicaciones. Esto puede manifestarse en obstrucción por estrechamiento de la luz o hemorragia y perforación por tejido heterotópico remanente.

5. La resección de una porción del ileon a cada lado del divertículo es el tratamiento de elección que se recomienda, en virtud de la alta incidencia de tejido heterotópico. Esto puede efectuarse con una amplia incisión elíptica próxima a la base y cierre con puntos de Connell, o con la resecsegmentaria del asa del ileon conteniendo el divertículo y anastomosis términoterminal. Esta última técnica es aplicable especialmente a los casos en que la base del divertículo es tan amplia, que cualquiera otra elección producirá una estenosis intestinal, como ele caso diagnosticado con rayos röntgen.

RIASSUNTO E CONCLUSIONI

1. L'eliminazione di sangue per via rettale, specialmente in concomitanza di una sindrome addominale acuta, dovrebbe far sospettare il diverticolo di Meckel.

2. Nelle operazioni addominali, diretta sistematica esplorazione dello ileo terminale dovrebbe essere condotta semprecché possibile.

3. Un diverticolo di Meckel dovrebbe essere sospettato e ricercato ogniqualvolta, nel corso di un intervento addominale, il reperto patologico é insufficiente a spiegare il reperto clinico.

4. La tecnica di chiusura invertente a borsa di tabacco dopo amputazione é da condannare. Per quanto sia la più semplice delle quattro tecniche delineate, purtuttavia é quella che presenta le più alte probabilità di complicazioni:—Occlusione per stenosi del lume intestinale, o emorragia e perforazione da residui di tessuto eterotopico.

5. In vista della frequenza del reperto di tessuto eterotopico, la resezione di un segmento di ileo ai due lati del diverticolo é la tecnica raccomandata. Questo procedimento può essere eseguito sia a mezzo di un'ampia incisione ellittica circonsrivente la base del diverticolo, seguita da chiusura invertente alla Connell, sia a mezzo di una resione segmentaria dell'ileo includente il

diverticolo seguita da entero anastomosi termino terminale Quest'ultima tecnica e elettiva per quei casi di diverticolo a larga base che non permette altra tecnica se non si vuole rischiare stenosi dell'intestino come in un caso diagnosticato radiologicamente

SUMÁRIO E CONCLUSOES

1 A perda de sanque pelo rectum, especialmente em creanças, e na presença de doença aguda abdominal, deve levantar a suspeita de um diverticulo de Meckel

2 O exame do iluem terminal deve, quando possivel, ser rotineiramente feito durante as operações abdominais

3 Em uma operação abdominal em que não é encontrada uma adequada condição patológica para explicar a sintomatologia clinica, deve-se procurar atentamente um diverticulo de Meckel

4 A tecnica de inversão em bolsa de tabaco depois da amputação deve ser condenada Ainda que este seja o mais simples dos 4 processos propostos, ele oferece tambem a mais alta probabilidade de complicações Estas podem se manifestar seja numa obstrução por estreitamento do lumen ou hemorragia e perfuração devida aos tecidos heterotopicos deixados atraz

5 A resecção de uma parcão do ileum em cada lado do diverticulo e o tratamento recomendado, devido a alta incidencia de tecido heterotopico Esta pode ser executada seja por uma larga incisão eliptica proxima da base com sutura de Connell ou resecção da alça de ileum que contem o diverticulo com anastomóse termino-terminal A ultima tecnica descrita é especialmente aplicavel aqueles casos em que a base do diverticulo e tão larga que a escôlha de qualquer outro processo produza uma estenose do intestino igual a situação encontrada pelo exame radiologico

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Echoes of the Past

XI. THE FIRST LEPROSARIA

The Middle Ages witnessed many episodes of devasting disease. During those years the earliest evidence of the separation of the sick from the healthy is demonstrated. Leprosy was the first disease to receive this consideration.

In 736 A. D., St. Othmar first provided a segregation place for lepers in a "hospitiolum ad suscipiendos leprosos" near the Abbey of St. Gall. Under the direction of Pepin the Short (in 757) and Charlemagne (in 786) edicts were promulgated ordering lepers to be cared for in special buildings. The rules were very rigorous. Lepers were considered dead as far as their civil rights were concerned. They were to be supported by charitable contributions. Although mention of leper houses can be found in *History of the Franks* by Bishop Gregory of Tours (538-593), specific segregation of lepers is accredited to the efforts of St. Othmar, Pepin, and Charlemagne.

During the eleventh century leprosy began to run rampant again in Europe. With the spread of the disease, closed institutions for the lepers were constructed rapidly. These homes were known as leprosaria. In Italy, where King Rothari in the seventh century ordered the isolation of lepers, many were confined in the San Lazaro Hospital at Rome. As a result the Italian leprosaria became known as "lazaretti."

Leprosaria became prominent everywhere in the cities and villages of Europe. In France alone there were 2,000 leper houses at the beginning of the thirteenth century. The decision as to whether leprosy existed in a given person resided in a commission composed of laymen, doctors and surgeons.

Lepers were not permitted to enter churches or inns or to drink from public wells. They were even forbidden to speak to healthy people, and pointed out what they begged for by means of a stick. In their confined houses they lived on a cooperative basis. "Masters" were elected from among themselves to govern their activities.

The isolation of leprosy patients was the first step in segregation of persons with contagious diseases. Experience thus gained formed the basis for the measures taken when the "black death" spread throughout Europe in the fourteenth century. Subsequently the lessons learned in the management of lepers were applied to other conditions, eventuating at last in our modern concepts of hospitals for contagious diseases. —*Bernard J. Ficarra, M.D., F.I.C.S.*

Prolapse of the Uterus

An Operation for Its Relief

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PROLAPSE of the uterus is that condition in which the uterus descends toward or through the vaginal introitus. This entity may take one of several forms, and there may be any degree of prolapse from the moderate to the complete descensus (procidentia) wherein the entire uterus protrudes from the vaginal orifice. In most instances cystocele and rectocele are associated with the prolapse, and in many cases of complete procidentia these accompanying conditions become so marked as to result in varying amounts of vaginal eversion with enterocele. The correction of these abnormalities by surgical intervention must accomplish, satisfactorily, many objectives, and any operation aimed at the cure of prolapse should do several things. The vagina must be restored to its normal position, depth and serviceability; the bladder should be returned to, and maintained in, its normal anatomic location as an abdominal rather than a vaginal organ; the pelvic floor and perinum should be rebuilt; the abdominal viscera should be restored and retained in their proper places. The operation herein described does all these things by a single vaginal approach, with a procedure applicable to all prolapses when the uterus is to be removed either because it is pathologic or because it is of no further importance to the patient.

Anatomic Considerations.—Three etiologic factors may contribute to the development of prolapse, and these may occur singly or in combination. Relaxation and separation of the supporting structures of the pelvis, resulting from childbirth, is the most common cause of uterine descensus. The two other potential contributing factors are (1) congenital structural weakness with disjunction of tissues and (2) the stretching that accompanies advancing years, when the mucosa becomes atrophied and its elasticity decreased and there is a loss of supporting fat and subcutaneous structures.

In order to accomplish proper repair of a prolapse and to obtain an anatomic readjustment that will fulfill all the requisites, one must keep in mind the normal anatomic character of the female pelvis, the pelvic floor and their supporting structures. Prolapse must be considered as a hernial protrusion of the pelvic floor, with the uterus acting as part of the covering of the hernial sac. This sac, which is lined by the peritoneum, has as its boundaries the pubis, the obturator internus and levator ani muscles and fascia, and the anterior wall of the rectum. The external covering of the hernia is made up of the bladder, the anterior and posterior vaginal walls and the uterus.

The uterus is retained in its normal position by three sets of supporting structures, upper, middle and lower. The upper set of supports is made up of the round ligaments, the broad ligaments and the sacro-uterine ligaments. The round ligaments have no great value as true reinforcements, but merely act as guy ropes to the fundus uteri. The broad ligaments become progressively stronger and more dense as they proceed downward on each side of the vagina, where they attach along the superior borders of the levator ani muscles and the triangular ligaments. Where the lower ends of [illegible] ro[illegible]ga-

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ments join the cervix and the vaginal vault, they divide, the thickest portions being reflected anteriorly to form the cardinal ligaments. These ligaments contain very strong elastic and muscle fibers that are of the utmost importance in the support of the uterus and the prevention of prolapse. Therefore, this tissue must be identified and made use of in any successful attempt at the correction of descensus. The sacro-uterine ligaments are sound structures which hold the cervix backward and upward, thus helping to retain uterus in its proper place in the pelvis and to maintain its normal anteflexion. They are peritoneum-covered bands which pass from the outer portions of the posterior surface of the upper third of the cervix outward, upward and backward to the upper part of the third sacral vertebra.

The middle supports of the uterus are the levator ani muscles and their fascia. In addition to these, the urogenital diaphragm aids greatly in the normal support of the pelvic structures. It constitutes a very strong portion of the pelvic floor and gives passive support in the region of the genital hiatus, where it reinforces the levator ani muscles. These are the chief supports of the uterus and the other pelvic viscera. So long as they remain firm these organs will be retained inside the pelvis. When they are weakened by trauma or atrophy, the pelvis is relaxed and the stage is set for all organs to herniate.

The lower support is the perineal body, a fibromuscular mass lying between the vagina and the rectum, which has bony attachments to the urogenital diaphragm. When the perineal body is stretched out or lacerated, the lower limits of the vagina evert and carry with them portions of the walls of the bladder and rectum, producing cystocele and rectocele.

In the development of prolapse there is usually an accompanying retrodisplacement of the uterus. This allows for abnormal stress to be put upon the uterus from above by intra-abdominal pressure and adds another factor in the production of this condition. As a result of this new position of the uterus (retroverted and prolapsed) with stretching of supporting ligamentous, muscular, fascial and fibrous tissues, these structures are elongated and hypertrophied. This gives an actual increase in the amount of tissue to be reckoned with in the repair and more elements that may prove of value in the final result.

Surgical Considerations.—In order to get a satisfactory permanent result from surgical treatment of prolapse, one must first decide what the operation is expected to accomplish. Many types of procedure have been advocated for the cure of this condition. Some have been discarded, and others are still in vogue with various surgeons. The choice of operative procedure should be contingent upon the proper answers to the following questions: What is the patient's age? Is menstrual function to be retained? Is the childbearing function to be maintained? Is a serviceable vagina desired or needed? Is there associated or potential pathologic change in the uterus, tubes or ovaries? Is the patient's general condition such as to preclude the performance of a major surgical procedure?

Certain operations have merit, and in the hands of their advocates give adequate results. In fact, we may resort to one of these procedures on occasion, when a patient's age, will to menstruate or desire to have children is a major consideration and hysterectomy would be undesirable; but in any such instance, we regard it as mandatory to make certain that the uterus and its adnexae are entirely normal before we agree to perform a major operation that leaves these organs in place.

The Manchester Operation and Its Modifications.—This is an operation done entirely by the vaginal route, designed to correct the prolapse and the cystocele and to retain the uterus. The operation may include tubal resection for sterilization, depending upon the desire of the patient to bear children and the confidence of the surgeon that his plastic repair will stand up under parturition In this procedure, amputation of the cervix is combined with plication of the cardinal ligaments on or across the lower uterine segment to support the uterus and the bladder A bladder advancement or cystocele repair of some type is usually done, and this is followed by posterior colpoperineorrhaphy

We object to this operation because its only value is in the correction of first-degree or second-degree prolapse, because the rate of recurrence of prolapse is relatively high, because it neglects the possibility that there may be some associated pathologic change in the uterus, and because, even though future pregnancy may be possible, it is fraught with difficulty and likely to result in postpartum prolapse

Combined Laparotomy and Vaginal Operation —In certain younger women, when no pathologic condition exists in the uterus and it is desirable to retain the organ, a combined abdominal and vaginal operation is done for correction of the prolapse The vaginal portion of the operation is performed first and consists of amputation of the cervix, cystocele repair and posterior colpoperineorrhaphy Abdominally, the round and uterosacral ligaments are shortened in order to correct the retroversion and to pull and hold the cervix back, the ovaries are suspended by shortening the utero ovarian ligaments, and, if desired, a tubal resection is done for sterilization This is a formidable and prolonged procedure

Wertheim-Watkins Interposition Operation —This was devised to place a prolapsed bladder behind the symphysis pubis, where it is maintained by bringing the uterus in front of the bladder Added to this there must be vaginal plastic repair With the small atrophic uterus that exists in elderly women, or when the uterus later becomes smaller, there is insufficient uterine bulk to retain the bladder, which may then roll around the uterus and again protrude Extensive studies have shown that intractable cystitis and trigonitis develop in many patients so treated, owing to displacement of the bladder and the fact that the uterus compresses the trigone This operation leaves *in situ* a uterus that may harbor or develop pathologic change, also it offers no assurance against future prolapse

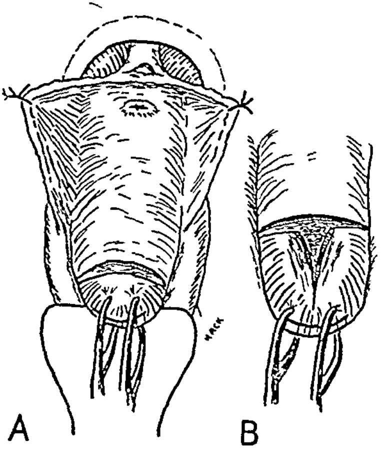

Fig 1 —*A*, primary incision of vaginal mucosa *B*, incision when bladder insertion is below line of primary incision

Neugebauer-Laforte Colpocleisis —This operation obliterates the vagina by suturing the anterior to the posterior vaginal walls below the uterus, which is pushed upward Among the many objections to this type of operation are the facts that the vagina is closed completely, that a pathologic uterus is left in place and is hidden from all future observation and that the rate of recurrence is very high This operation is reserved for very old women who have no further use for a vagina and who are in such sad physical condition as to preclude the performance of a more major procedure Such persons are encountered only rarely

Authors' Operation —The surgical procedure devised by the senior author has been used for a number of years with

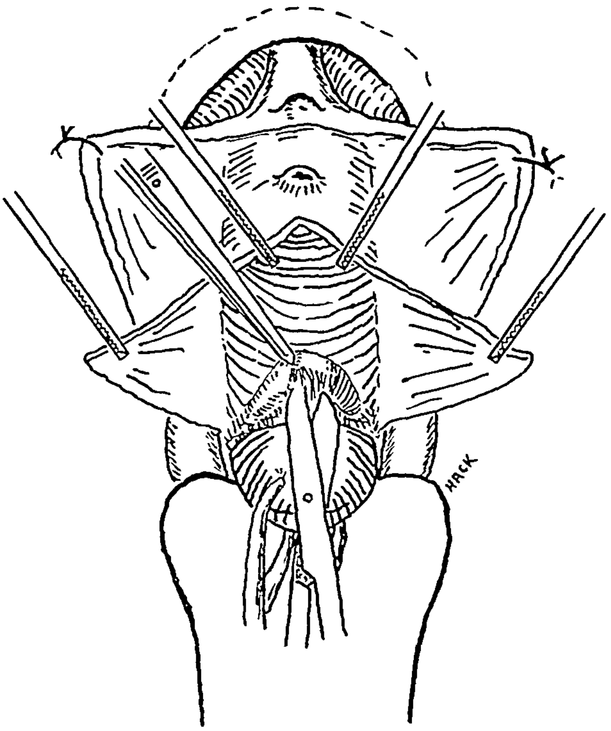

Fig. 2.—Separation of bladder and its fasciae from anterior surface of uterus. Vaginal mucosa has already been reflected off the bladder and incised up the midline.

practically complete success. It overcomes all valid objections that we have put forth against the other types of operation mentioned, and we feel that it is ideally suited to the patient with uterine prolapse when the uterus is to be removed.

In many instances proper preoperative care is as important to a happy outcome as the operation itself. Elimination of local and focal infection, edema of the tissues, traumatic and decubitus ulcerations and cystitis will assure a smoother postoperative course and a better end result. All vaginitis and cervicitis should be cleared up, together with any ulcerations that may exist, by proper medication and douching. Elimination of edema of the tissues can be accomplished by keeping the patient in bed for a few days with the prolapse reduced and retained within the vagina. This provides better tissues with which to work and eliminates a great deal of the excess vascularity that may exist. Cystitis can be eliminated by the proper use of antibiotic or chemotherapeutic agents specific for the organisms causing the difficulty. Since many of the patients are elderly, a general physical checkup and a study of the blood chemical values might aid discrimination in the choice of patients for operation and allow for preliminary treatment to fortify them before the operation is performed. Any anemia present is treated by blood transfusion before, during and after operation. Preoperative elimination of foci of infection (dental) may reduce the postoperative morbidity rate, and the preoperative administration of proper vitamin products to malnourished patients will facilitate postoperative healing.

It has been found that the insertion of a vaginal suppository containing 100, 000 to 200,000 units of penicillin the night before operation resulted in a marked diminution in the rate of postoperative morbidity.[1] We use this as a routine measure.

After suitable preparation and anesthesia, the labia are sewed to the inner aspects of the thighs to provide better visibility and to keep the loose labial tissues out of the field of operation. The cervix is grasped with volsella or tenaculum forceps and is drawn down as far as possible. The reflection of the bladder at its lowermost point is found by determining the line at which the fixation of the vaginal mucosa gives way to the looseness over the bladder. Care must be taken in making the primary incision lest the bladder be entered. At this point it must be determined just what vaginal depth is desired from the completed operation. If the desired vaginal length is less than that which will be obtained by making the original transverse incision below the level of the bladder. (Fig. 1*A*), this incision is made above the lowest bladder attachment to the cervix and the lower flaps reflected downward (Fig. 1*B*) in order to reach the vesicouterine fascias for freeing. The incision is made through the mucosa in a complete circle around the cervix. The mucosa is then reflected off the bladder and uterus by combined sharp and blunt dissection. With a round-tipped scissors the bladder is separated from the mucosa in the midline. When the proper plane of cleavage is determined it is relatively simple to insert the closed scissors under the mucosa separating this from the bladder. When the uppermost safe level has been reached, the blades of the scissors are opened and withdrawn, separating the tissues further laterally. An incision is then made up the midline of the mucosa to the farthest point of the separation. This process is continued upward until the incision reaches a point just below the urethral orifice. Forceps are placed on the flaps and the dissection is carried out laterally, the mucosa being separated from the bladder as far out as possible. Heavy fascial attachments are cut, and such tissues as will respond to the pressure of the gauze-covered finger are pushed off (Fig. 2).

The bladder is then dissected off the uterus. An incision is made at the lowermost attachment of the bladder to the uterus, and the bladder is pushed upward with a gauze sponge, sharp dissection being used for the cutting of such fibers as may be resistant to finger pressure. Thus, the bladder is reflected upward as far as it will go, and it is then held out of the way by a narrow Jackson retractor.

The uterus is then raised anteriorly and the posterior vaginal incision deepened; the peritoneum of the posterior cul de sac is identified and incised and the peritoneal cavity entered (Fig. 3*B*). This incision is widened by the fingers, and a posterior retractor is inserted. We are now prepared to proceed with the vaginal hysterectomy. The lateral incision in the mucosa is widened, and the Heaney hysterectomy clamp is placed on the exposed lower edge of the broad ligament from below upward,

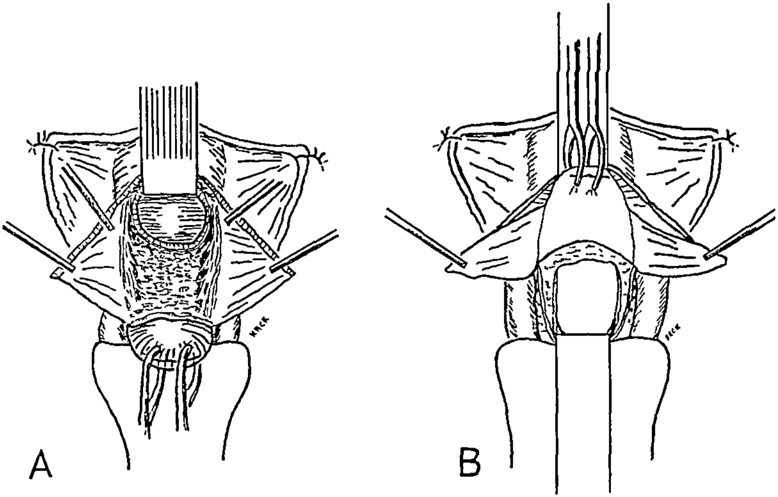

Fig. 3—*A*, peritoneal cavity entered through anterior cul de sac and bladder held out of the operative field by retractor. *B*, peritoneal cavity entered through posterior cul de sac and posterior retractor in place.

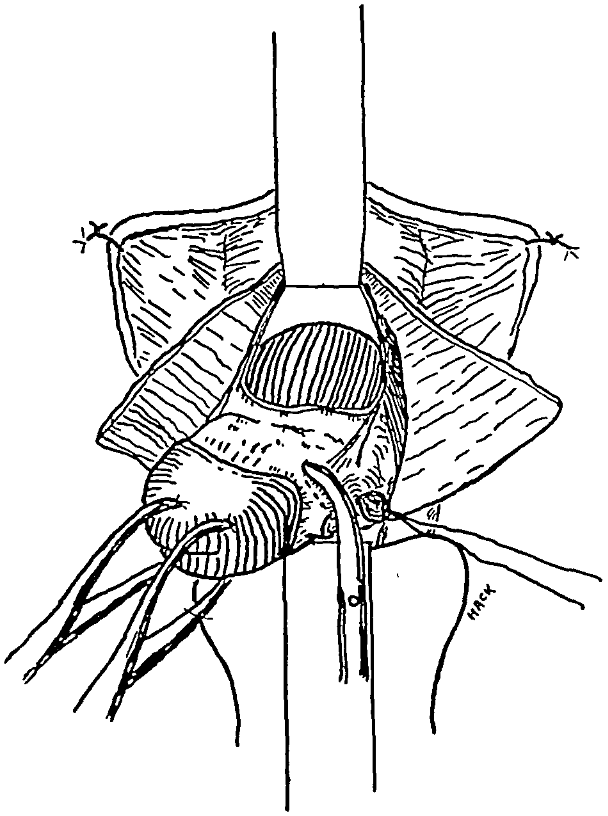

Fig. 4.—Second clamp bite on lower edge of broad ligament including uterine artery. Previously secured first bite, with long "guy rope" attached, is visible.

as close to the uterus as possible, because it is in these lower bites that a ureter may be inadvertently caught. This clamp usually catches the uterosacral ligament unless that ligament is set unusually high (Fig. 4). The tissue is severed medially to the clamp, and the material encompassed in this bite is secured by a figure-of-eight suture, which is tied as the clamp is slowly removed along its curve. This catgut is left long and the end secured by a clamp for easy accessibility and downward traction when the tissue is to be used in the later stages of the operation for closure and support. Another bite is then taken above this and sutured in the same manner. This portion of the broad ligament usually includes the uterine artery. The process is then repeated on the opposite side. At this point, the anterior peritoneal plica should be easily identifiable. The anterior peritoneum is then entered and the anterior retractor replaced inside the peritoneal cavity (Fig. 3*A*). The next bite is then taken on each side. This should bring anterior and posterior peritoneum together as an aid in peritonization. When this tissue is cut the uterus can be turned upon its axis quite readily and the fundus can be delivered. We prefer bringing the fundus out posteriorly by pulling the cervix high anteriorly and delivering the corpus by traction with tenaculums. The broad ligaments are then clamped, severed and ligated from the top downward, the first suture in this step having in it the top of the broad ligament, the round ligament and the utero-ovarian ligament. This suture is again left long, so that we can use this tissue for closure and support and so that traction on this suture will bring the tubes and ovaries into view when the uterus is removed. This process is then carried on until the uterus is completely removed. We do not keep too close to the corpus in this portion of the operation, but rather remove the redundant and lax excess of upper broad ligament, which has no strength and no supportive value.

By traction on the strings attached to the upper portions of the broad ligaments aided by traction with Allis forceps, we now can bring the tubes and ovaries into view and inspect them carefully (Fig. 5). If any pathologic condition is found, the adnexae can readily be removed by placing the clamp across the infundibulopelvic ligament and cutting away the tube and ovary. The pedicle is secured by a figure-of-eight suture.

We are now ready for plastic repair, support of the bladder and vaginal vault and closure of the peritoneal cavity and vagina. Because most of the patients already have or will have urinary incontinence and because we wish to close the herniation produced by the midline separation of the perivesical and periurethral fasciae, the first part of the repair is the bringing together of these fasciae in the midline. This is accomplished by means of a series of interrupted fine catgut suture spaced about ¼ inch (0.6 cm.) apart, starting just below the level of the urethral opening and proceeding downward to below the bladder neck, paying particular attention to the region of the urethrovesical junction, as this is the region of the urethral sphincter. In patients with severe incontinence it may be advisable to place a second layer above this for reinforcement. The next suture is probably the most important in the entire repair, since it is designed to cure the cystocele. Starting on the left side, a suture is run from the peritoneal surface of the round ligament caught above the *original suture, to the anterior peri*toneum and then to the subpubic fasciae, which are among the strongest fasciae of the entire body (Fig. 6). This is tied, and the process is repeated on the right side. This makes the bladder an abdominal organ, fixes it securely above the subpubic fasciae and the round ligaments, and peritonizes the area. The next step is closure of the abdominal cavity, closure of the posterior peritoneal opening and peritonization. A suture is now placed which begins with the left round ligament, includes the peritoneal surfaces of the left broad ligament, the uterosacral ligament and the cardinal ligament, the posterior peritoneum as high up as it can be reached in order to obliterate the hernial sac of the enterocele, the right cardinal and uterosacral ligaments, the peritoneal surface of the right broad ligament and the right round ligament. Thus we have placed a purse string around the peritoneal cavity opening (Fig. 7*A*). This is pulled up and tied. In order to provide further support for the bladder and close the peritoneum more securely, the round ligaments are brought together and the long catgut identifying stays are tied in the midline. This process is repeated with the uterosacral ligaments. The only weak point that may now exist will be behind the uterosacral ligaments, the point at which enterocele

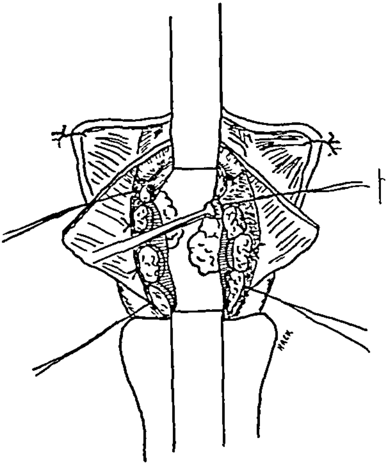

Fig. 5.—Inspection of tubes and ovaries after removal of uterus.

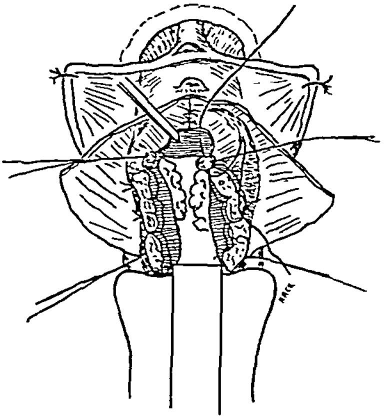

Fig. 6.—Suture encompassing upper pedicle, round ligament and subpubic fasciae.

may originate. Exploration with a finger will determine the presence of such a vulnerable point. If it is found to exist, another suture, going from the uterosacral ligament and peritoneum to the posterior submucosal, pararectal and paravaginal fasciae to the opposite uterosacral ligament, will eliminate this hazard (Fig. 7*B*).

The vaginal mucosa is now trimmed sufficiently to allow the edges to meet in the midline. The two mucosal edges are brought together with interrupted sutures of catgut placed about ¼ inch (0.6 cm.) apart, starting at the upper limit of the vaginal incision and working downward. As we reach the level of the tied together round ligaments, the mucosal suture is run through these ligaments to obliterate the dead space and help to support the vaginal wall (Fig. 8). The same procedure is followed when the level of the uterosacral ligaments is reached. If greater maximal vaginal length is desired, the mucosa is closed in its entirety, longitudinally. If the length of the vagina is satisfactory without this added amount, the lower end of the incision (that part remaining from the circumcision of the cervix) may be closed from side to side.

For the completion of the operation it is necessary to have an extensive and satisfactory posterior colpoperineorrhaphy. This should go as high as possible, meeting the anterior incision in most cases. The great importance of perineal repair is based on three facts: first, it throws the anterior repair backward, making the lower end of the anterior incision the top of the newly formed vagina; second, it gives further support to the bladder and the peritoneal contents, and finally, it builds up the perineum, which adds length to the posterior vaginal wall and depth to the vagina. Any good method of perineorrhaphy that will accomplish these things will prove satisfactory.

The postoperative care is the same as that provided after any surgical procedure except for the treatment of the bladder. An indwelling Foley catheter is inserted at the completion of the operation and is allowed to drain continuously. This is important because (1) it prevents overdistention of the bladder and precludes the possibility of separation of sutures by the pressure of a full bladder; (2) it does away with the necessity of straining to void and the danger that such straining will result in disruption of sutures, and (3) it allows for the shrinkage and regaining of tone in a bladder which has been stretched beyond its capacity to contract efficiently. This catheter is left in place for six days. On its removal, if the patient does not void spontaneously and with relative promptness, catheterization is done on distress or every eight hours, whichever comes first. If the patient is able to void, she is catheterized once daily for residual urine until less than 60 cc. is obtained. This assures us that the efficiency of the bladder has returned, that it will not become overdistended and that the patient will be comfortable.

These basic principles are followed in all cases of prolapse in which the uterus is to be sacrificed, but we are called upon occasionally to improve or vary our technic as the case demands. At the outset of the hysterectomy we mentioned the hugging of the cervix with the clamp, but where a great deal of redundant hypertrophied tissue exists it may be necessary to remove some of this tissue in order to get sufficient tension in the supporting structures. Also, in the presence of much extra tissue it may be deemed advisable, when anchoring the bladder to subpubic fasciae, to include some of the urogenital diaphragm and the deep anterior vaginal fasciae to add to the support, because the subpubic fasciae are extremely strong and constitute the most formidable anchoring point to be found in the entire pelvis.

The operation herein described has proved eminently successful for many reasons, and we cannot see why it should not be universally adopted. The technical procedure is not difficult, is carried

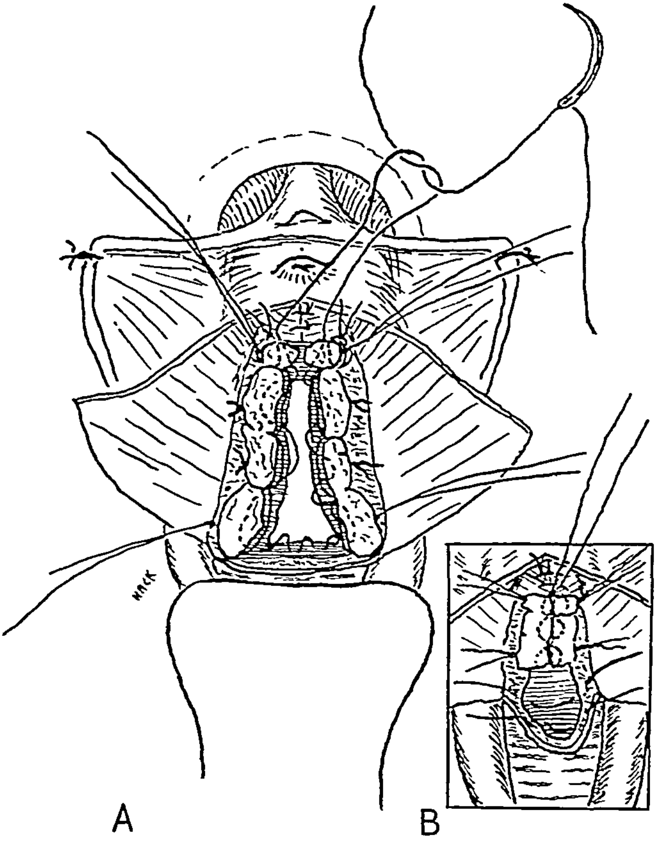

Fig. 7.—*A*, purse string suture closing posterior peritoneal cavity opening. Right and left subpubic angle sutures are shown in place and tied. *B*, suture tied Suture placed to eradicate space between sacrouterine ligaments and perivaginal and perirectal fasciae.

out entirely under direct vision and is really safe. The advantages of vaginal hysterectomy are many, and to leave a uterus in a patient who is submitting to a major pelvic operation is not considered wise. We remove the uterus because most of the patients are approaching the menopausal age, when the uterus is no longer an asset; because many of them have menorrhagia based upon the presence of

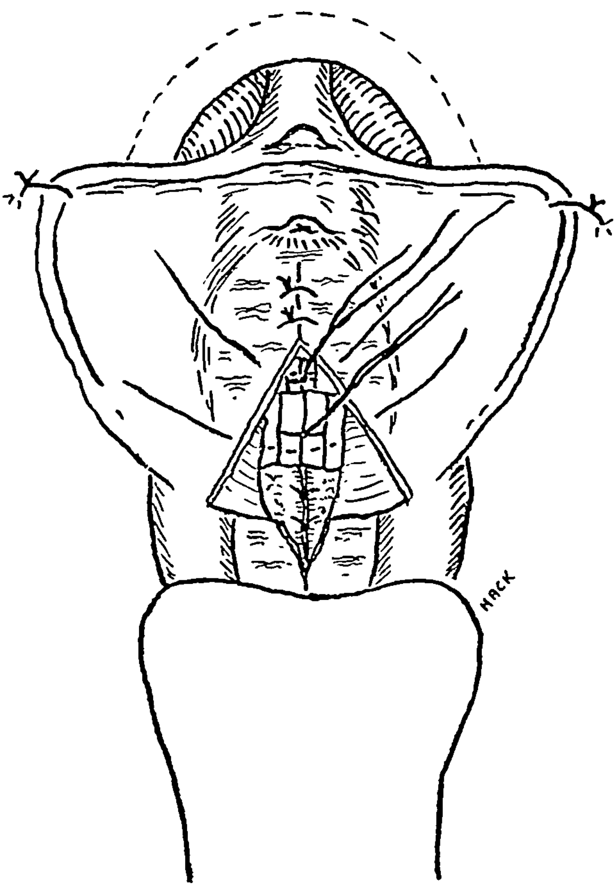

Fig. 8.—Closure of vaginal mucosa after trimming. Round ligaments have been tied together in midline, as have sacrouterine ligaments; vaginal mucosa is sutured to these as their level is reached in mucosal suturing.

fibromas, adenomyosis, endometrial hyperplasia or metritis; because it gives us an opportunity to inspect and, if necessary, remove tubes and ovaries which may be abnormal and might otherwise go on to further and more serious pathologic change, and because, with the uterus out of the way, we can accomplish a more satisfactory cure of the prolapse.

The advantages obtained by treating prolapse with this operative procedure are: raising the bladder and maintaining it at or above its original level; anchoring of the cardinal ligaments to either the subpubic fasciae, the urogenital diaphragm or the deep anterior vaginal fasciae and getting the best available support; removal of all redundant tissue; shortening of the cul de sac of Douglas to prevent enterocele; and adding further support to the bladder by bringing the cardinal, sacrouterine and round ligaments together in the midline.

RÉSUMÉ

Les auteurs décrivent une technique opératoire dans les cas de prolapsus utérin; technique qui donne, à leur avis, d'excellents résultats. La technique est décrite au complet. Les auteurs sont d'avis que cette technique est toute indiquée dans les cas où les patientes doivent subir l'hystérectomie. Ils la recommandent à leurs confrères.

ZUSAMMENFASSUNG

Die Verfasser beschreiben eine Operation zur Behandlung des Gebaermuttervorfalls, die nach ihrer Erfahrung viele Vorteile hat. Es wird eine genaue Beschreibung der Technik gegeben. Die Verfasser sind der Meinung, dass das Verfahren bei Kranken mit Gebaermuttervorfall, deren Uterus entfernt werden muss, ideal ist. Sie empfehlen das Verfahren den chirurgischen Kollegen aufs Waermste.

RESUMEN

Se describe una operación para casos de prolapso uterino, que se considera ventajosa de acuerdo con la experiencia del autor. Se consigna descripción completa de la técnica. Este procedimiento es idealmente adecuado en casos de prolapso uterino en que haya que efectuar histerectomía, según los autores. Estos lo recomiendan mucho.

RIASSUNTO

Gli Autori descrivono un'operazione per il trattamento del prolasso uterino, operazione che nella loro esperienza presenta molti vantaggi.

La tecnica operatoria dettagliata e presentata Secondo gli Autori questo procedimento e particolarmente indicato in quei pazienti il cui utero e da rimuovere Essi raccomandano altamente il metodo ai colleghi chirurghi

SUMÁRIO

Os autôres descrevem uma operação paliativa em casos de prolapso do utero, o qual, em sua experiencia, apresenta muitas vantagens Uma detalhada descrição da tecnica e includa Na opinião do autor este processo e ideal para o paciente com prolapso cujo utero foi removido Eles o recomendam com insistencia aos outros cirurgiões

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Announcement

International Board of Occupational Surgery

The Executive Council of the United States Chapter and the Board of Trustees of the International College of Surgeons have unanimously approved the formation of an International Board of Occupational Surgery, the aims of which are (*a*) elevation of standards for the practice of occupational surgery, (*b*) conservation of the health of the worker after occupational injury, (*c*) official recognition of this specialty, (*d*) stimulation of interest in this field by students and members of the profession, and (*e*) cooperation in the establishment of facilities for graduate education in occupational surgery by means of residencies in hospitals affiliated with medical schools, or their equivalents

Frederick W Slobe M D F A C S, F I C S Chairman

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For further details address Dr Arnold S Jackson, Secretary, United States Chapter, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10, Illinois

Myoepithelial Hamartoma of the Stomach Wall

MAX THOREK, M.D., F.I.C.S.
CHICAGO

THE pathologist's report that the specimen removed by a subtotal gastrectomy was a "myoepithelial hamartoma" moved me to institute a search of the literature to obtain more information concerning this rarely encountered lesion.

The term *hamartoma* was coined by a great German pathologist, the renowned Hans Albrecht, in 1904. Nicholson,[1] in his recently published work on tumor formation, said that the name was given to certain adenomyomas of the gastrointestinal tract which contain tubules and cysts lined with more or less columnar epithelium, and surrounded by bundles of hypertrophied intestinal muscle, but without the interposition of the cellular structure which is characteristic of the endometrium. As these often contain more or less perfectly formed pancreatic acini, they must be regarded as instances of accessory pancreas, the ducts of which have undergone dilatation at the same time the secreting parenchyma became atrophied. The typical Albrecht's hamartoma is, then, a malformation, the cells of which exhibit some ability to grow independently. It differs from other endometrial tumors because it is unquestionably *congenital*, whereas most of the endometrial tumors encountered are *acquired* postnatally.

Aberrant or accessory pancreas has formed the subject of a considerable literature since the year 1859, when J. Klob[2] published his paper on *Pancreas-Anomalien*. The next year an Englishman, Montgomery,[3] presented two specimens to the Pathological Society of London. One of these was from the stomach wall. A number of papers which have come out in the last decade have reviewed the history *in extenso*. Especially informative are those of Faust and Mudgett[4] and of Mitchell and Angrist.[5]

It was B. Earl Clarke of Providence[6] who suggested that the "tumor-like" masses of smooth-muscle and epithelial components" occasionally encountered in the gastrointestinal tract should be studied with a view to establishing their basic identity and given a name which would recognize this common origin. The term "hamartoma" originally suggested by Albrecht is generally accepted for such tumor-like masses of embryonic origin. It is therefore suggested that this term, combined with the descriptive term "myoepithelial," be used to designate the entire group, as it seems to be "all-inclusive and indicates the pathogenesis and the component tissue elements." Clarke collected 8 cases, in 4 of which the tumor was located in the antrum of the stomach or at the pylorus.

The chief value of Faust and Mudgett's paper lies in the carefully compiled tables in which they summarized their search of the literature. They made free use of the review previously made by Poppi[7] in 1935, which listed 300 cases, going back as far as 1727. In these earlier reports considerable doubt must be cast on the correctness of the diagnosis. Faust and Mudgett added 57 cases to those listed by Poppi and in a final table noted the distribution of aberrant pancreatic tissue, including the percentage incidence. As we are concerned only with lesions of the stomach, the figures on that location alone will be cited. Of 370 lesions, 95, or 25.67 per cent, were found at the pylorus or in the stomach antrum. Thus the stomach appears as the most favored location for wandering pancreatic tissue to find a resting place. Faust and Mudgett combined all the figures of the earlier reviewers so as to get this total of 370 cases of aberrant pancreatic tissue reported up to 1940.

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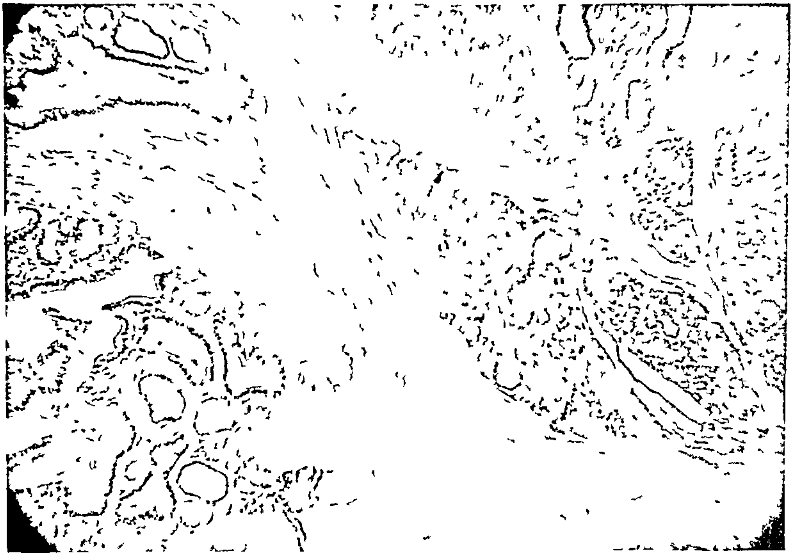

Fig 1—Pancreatic tissue surrounded by strands of smooth muscle fiber At left are branching *ductlike structures lined by tall cylindric cells Hematoxylin and eosin, × 100*

Searching the literature since 1940, I have found 27 cases designated as "hamartoma", but only the report of Mitchell and Angrist[8] concerned hamartoma of the stomach In 1941 Krieg of Detroit[9] published an account of "heterotropic pancreatic tissue producing pyloric obstruction" A review and a case report were included Krieg's paper is largely based on that of Poppi, several of whose tables he reproduced, and he made no attempt to search the literature for cases reported during the five and a half years between Poppi's publication and his own He did not use the designation *hamartoma* and was probably unfamiliar with Clarke's plea for instituting a standard nomenclature

The chapter on anomalies of the pancreas in Bockus' three-volume *Gastroenterology*, which appeared in 1946, was written by D L Dozzi[10] Like most textbook articles, this is merely a compilation and summary of the work of previous authors whom I have already cited It makes no original contributions to the subject of hamartoma of the stomach Baumel and Guibert[11] reported 5 cases of "aberrant pancreas" in 1948, but unfortunately I have not been able to see the original article, so do not know whether any of these 5 were instances of hamartoma of the stomach The paper of von Keiser[12]—also published in 1948—is interesting in that it considers the anomaly largely from the roentgenologic viewpoint, which most other authors have ignored, or merely touched upon by saying that *roentgen diagnosis is impossible* In 1947 appeared papers by Chapman and his co workers,[13] by Hallendorf and Lovelace,[14] and by Ba[illegible] [illegible]gh[15]

Though the *origin* of "aberrant" pancreas is much disputed, one of two etiologic theories is now generally accepted: (1) that put forward by Zenker[16] in 1861 and restated by Warthin[17] in 1904; and (2) that advanced by Taylor in 1927.

1. Zenker postulated the formation of an anomalous pancreatic anlage near the primitive pancreatic diverticulum, which subsequently became separated from its primitive place of origin as the intestine lengthened during embryonic development. If such an accessory body were to form before the stomach is differentiated from the duodenum, it might become embedded in the stomach wall; if it were formed *below* the main organ, it would be carried downward. Zenker, it would seem, envisaged only one primitive diverticulum. Later observers thought of *three* anlagen, one dorsal and two ventral. The dorsal anlage develops as the head of the pancreas; the two ventral anlagen fuse to form the chief portion of the gland itself, as well as Santorini's duct. Glinski,[19] at the beginning of the present century, modified Zenker's theory by suggesting that, should there be a failure of the original diverticulum to fuse with the others, this would lead to the formation of an accessory pancreas, while separate development of each diverticulum would probably produce *two* accessory glands. The persistence of one ventral diverticulum would be likely to result in an accessory gland carried downward, but should a double dorsal outgrowth occur with the independent persistence of one, an accessory gland carried upward to the stomach would be the result.

In case of *two or more* accessory glands in the stomach wall, the occurrence of a triple—or even multiple—primitive dorsal outgrowth must be assumed. This, Warthin has pointed out, is the weak point in the Zenker-Glinski theory. In his opinion it is more reasonable to assume that accessory pancreatic tissue is formed from the lateral buddings of the rudimentary pancreatic ducts as they penetrate the intestinal wall, the mass of pancreatic tissue thus formed being snared off and carried by longitudinal growth of the intestine either upward or downward. Warthin added that this explanation is not only more simple but embryologically more satisfactory, because it is not based on the assumption of complicated embryonic conditions. Further, in this way one can explain the occurrence of isolated pancreatic tissue in the papilla of the duct of Santorini, where a number of investigators have reported finding it.

2. Taylor set forth his theory somewhat after this fashion: The ectoderm of the primitive digestive tube is destined to give rise to a great variety of epithelial structures. If a slight error in development takes place, the epithelium may appear in a situation where it does not properly belong; this is *congenital* heterotopia. Congenital heterotopia has invariably been located in the upper portion of the alimentary tract. (In a series of 81 cases, Taylor listed 6 cases of accessory pancreas found in the stomach.) Congenital heterotopia is a dysontogenetic, and not an atavistic, condition. It is a tissue formation arising from an error of development of the fetal ectoderm. In its distribution and in its antimesenteric situation, congenital heterotopia corresponds closely with the type of diverticulum occurring in the intestine of the embryo. It is concluded that the condition arises from embryonic diverticula which persist as an anomaly. The precise nature of the abnormal stimuli that results in their formation is not yet understood.

Pathologic Picture.—When the "accessory pancreas" occurs in the stomach it usually takes the form of localized nodules or flat plaques, which may be located on almost any section of the gastric mucosa, though most often in the region of the pylorus. Delhougne,[20] who wrote in 1924, collected 40 cases of this condition in the stomach; in most of them the pancreatic tissue was at or near the pylorus. Taylor, three years later, described 6 cases of

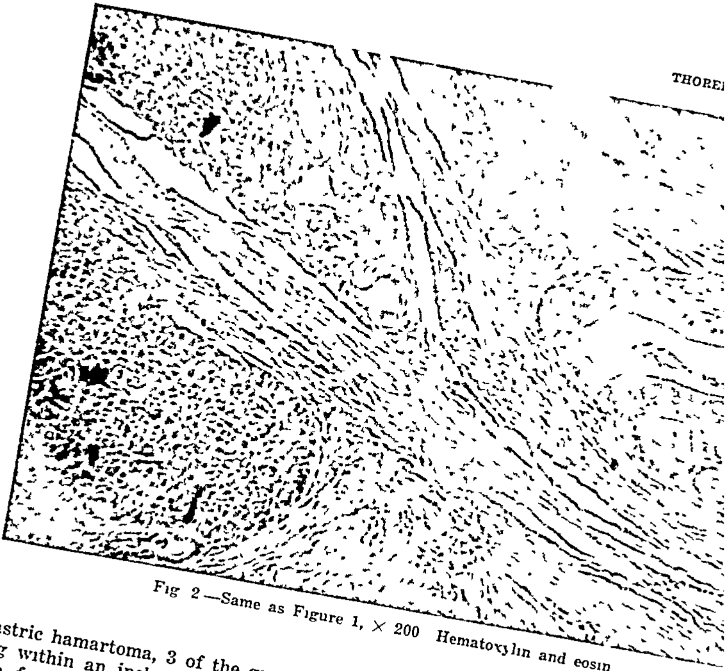

Fig 2—Same as Figure 1, × 200 Hematoxylin and eosin

gastric hamartoma, 3 of the growths being within an inch of the pylorus, 2 in the fundus and 1 near the esophageal orifice. Clarke expressed the opinion that the complicated embryonic mechanisms in the pyloric region in connection with the development of the pancreas and the bile ducts probably account for the frequency with which these defects are found in this location. However, the fact that well differentiated aberrant pancreatic tissue has been observed in far removed locations, such as the small intestine, the peritoneum and the spleen, would seem to indicate that embryonic remnants from any part of the gastrointestinal tract can, if conditions are favorable, differentiate into pancreatic tissue.

Identification may be difficult, and confusion with adenomyoma has often occurred. To Faust and Mudgett the tissue frequently appeared—when roentgeno-
logically examined—as a polypoid m
or as an ulcer, as it may be the site
acute inflammation or even become nec
tic. Other investigators have observ
neoplastic growths, adenomas or car
nomas. Krieg stated (but without givin
his authority) that the heterotropic mas
is composed of normal pancreatic cell
and has a definite duct system which ap-
pears to function in its natural manner.
In approximately one third of the reported cases the mass contained islands of Langerhans. Krieg also noted that symptoms occur in only a few cases, because many accessory pancreases have been discovered only at autopsy or at operation for conditions wholly unrelated to the aberrant tissue. When symptoms are produced, however, they are frequently the result of pathologic changes of the same nature as those which might have taken place in a normally placed gland.

In reviewing the literature, one is impressed by the utter lack of any uniformity in the recording of *symptoms*. Danzis[21] listed a number of instances in which the mass of aberrant tissue was mistaken for a malignant tumor and removed by a radical surgical procedure. A number of cases are reported in which the mass has caused symptoms so closely mimicking those of acute appendicitis that a laparotomy has been hastily performed, a perfectly innocent appendix excised and, only after an extended search, the true culprit located in the stomach, so placed as to cause pyloric obstruction or some other cause of the acute symptoms. According to Krieg, heterotopic pancreatic tissue occurs more frequently than present statistics indicate, but, because it produces symptoms in very few cases, its presence is not suspected. When symptoms are present they are frequently caused by such pathologic changes as a normally placed pancreas would exhibit. Of Taylor's 6 patients, not one had a record of any manifestations of gastric disturbance during life (the cases were all observed at autopsy). Krieg gave "the fundamental cause of symptoms" as "interference with the normal intestinal motility." He went on to say that local spasm and muscle hypertrophy and contraction have been characteristic of all gastric lesions, while the complication of intussusception occurs nowhere but in the small bowel. When aberrant pancreas is located in a Meckel's diverticulum—as in a good percentage of the reported cases—its true nature as a congenital anomaly is emphasized. Poppi has given special attention to symptoms and figures and found that in nearly 40 per cent the preoperative diagnosis was peptic ulcer, located either in the stomach or in the upper part of the duodenum. Epigastric pain was the most frequent complaint, but tentative diagnoses of cholecystitis, appendicitis, pyloric obstruction or intussusception were frequently made.

Actually there would seem to be no possible way of making a preoperative diagnosis. Only when the tissue has been excised and viewed under the microscope can its true nature be ascertained. Microscopic diagnosis is easy in most cases. My own is perhaps, typical.

REPORT OF CASE

A white man aged 47 was admitted to the American Hospital of Chicago on Sept. 11, 1950. He stated that he had been well until about two years prior to admission, when he began to have pain in the epigastrium, unconnected with the ingestion of food but definitely aggravated by alcoholic beverages. At the onset of the illness roentgenograms had been taken of the gastrointestinal tract, but nothing definite had been discovered. However, a second set of roentgenograms, taken just before admission, showed a filling defect in the antral portion of the stomach. At no time had there been melena, and no loss of weight had taken place.

Physical Examination. — The patient was well nourished and well developed. He was not in distress, and except for the slight tenderness in the epigastrium, the results of physical examination were not remarkable.

Laboratory Data.—The value for blood urea nitrogen was 12.7; for blood sugar, 83. The Ewald test disclosed a total acidity level of 67, a free hydrochloric acid value of 38 a combined value for acids of 29. The value for total proteins was 6.9. The albumin-globulin ratio was 4.20/2.7. Serologic tests revealed no abnormality.

On September 14 a subtotal gastric resection was performed. The patient bore the procedure well and was returned to his bed in good condition. Convalescence was without incident, and up to the time of preparing this report there has been no recurrence of symptoms. The patient has gained weight and feels well.

The notes of our own pathologist were so unusual that we decided to submit the specimen to the American Registry of Pathology in Washington. Both reports follow:

Report of Pathologist at American Hospital, Chicago: "Specimen: Portion of stomach. *Gross Description:* Elliptic section of stomach wall (autrum), measuring 7 by 4 cm. In the center of the specimen is a firm bulging area, 12 mm. in diameter. Over this area the gastric mucosa is freely movable and no lesions are visible. Section of this bulging area shows it to be circumscribed, the cut surface is gray, varied by occasional yellowish spots *Microscopic Description* (Figs 1 and 2) Sections show mucosa and submucosa to be normal In the muscular coat islands of pancreatic acini and many ductlike structures can be distinguished The pancreatic acini are well formed The cytoplasm of the cells contains pink stained granules Islets of Langerhans are not identified The ducts vary in size from small round structures lined by a single layer of columnar cells to large tortuous ones, in which the epithelium forms papillary infoldings Some of the ducts are filled with pink-staining acellular material Interlacing bundles of smooth muscle fibers surround the pancreatic tissue and the ducts *Pathologic Diagnosis* Myoepithelial hamartoma of the stomach "(Dr M H Field)

Report of Dr Elson B Helwig, Armed Forces Institute of Pathology, Washington, D C The lesion from the stomach which you contributed is interpreted as a myoepithelial hamartoma The epithelial element in the present specimen is comprised as ductlike structures and acinar pancreatic tissue Since there is no ballooning of the ducts, it is probable that the ducts empty into the gastric mucosa

'Among the similar lesions recorded at the Institute, there has been an occasional one which has shown acute inflammation On the basis of the Institute material, a malignant tumor arising in such a lesion has not been demonstrated "

COMMENT

As compared with those reported by earlier observers, this lesion would seem to take its place logically in the classification which Clarke and those who wrote after him—notably Faust and Mudgett and Mitchel and Angrist—designated as myoepithelial hamartoma This I consider a more exact name than 'aberrant pancreas' Doubtless, however, we would have been justified in calling the lesion 'aberrant pancreatic tissue', in that both pathologists testified to the presence of characteristic pancreatic structure The fact that a search of the literature indicates that hamartomas can never be positively diagnosed except by microscopic examination doubtless leaves many such lesions unrecognized This makes it imperative that the general practitioner—usually the first to be consulted—should be kept aware of the possibility of 'aberrant pancreas" as a cause of some obscure gastrointestinal manifestations which cannot be readily classified

SUMMARY

1 Aberrant or accessory pancreas has been recognized since 1859

2 The term *hamartoma* was coined by Hans Albrecht in 1904, to include any nodules of aberrant tissue, whether their structure was that peculiar to pancreatic tissue or not

3 In 1940 B Earl Clarke advocated calling all typical lesions of the gastrointestinal tract *"myoepithelial hamartoma"* This designation is now generally accepted by medical writers Up to 1940, 370 cases had been reported

4 The exact cause of the lesion is not known Two theories have been put forward—that of Zenker (1861), modified by Warthin, and that of A L Taylor, promulgated in 1927 Zenker postulated the formation of an anomalous pancreatic anlage near the primitive pancreatic diverticulum which became separated from its place of origin as the primitive intestine grew longer, and eventually lodged in the stomach or duodenum Taylor assumed the occurrence of an error in development by which the epithelium of the primitive digestive tube appears in a situation where it does not properly belong, this is congenital heterotopia—an error in development of the fetal ectoderm When the misplaced tissue is located in the stomach, it most often appears as a flat plaque or nodule at or near the pylorus Less often, it appears in the fundus of the stomach Identification is difficult, and roentgenologic study offers little aid Accurate diagnosis can never be reached except by microscopic examination of tissue obtained either at operation or at autopsy

5 A case is presented of a 47-year-old man, with pain in the epigastric region of two years' duration, not related to the ingestion of food but aggravated by alcoholic beverages Roentgenograms taken at the onset of the illness revealed no ab-

normality, but a second roentgen examination shortly before the patient's admission to the hospital showed a filling defect in the antral portion of the stomach. Physical and laboratory examinations gave no definite information. Subtotal gastric resection permitted the removal of a mass in the antral portion of the stomach. On section this mass showed islands of pancreatic acini and many duct-like structures. The final diagnosis was myoepithelial hamartoma of the stomach.

RÉSUMÉ

Le pancréas surnuméraire a été reconnu dès 1859.

Hans Albrecht en 1904, a déjà trouvé la terminologie "hamartoma" pour tout tissu ressemblant ou non à du tissu pancréatique.

En 1940, B. Earl Clarke appelle toute lésion atypique du système gastro-intestinal "hamartoma myo-èpithélial". Le terme est actuellementaccepté. 370 cas ont été rapportés jusqu'à 1940.

L'étiologie de la maladie est inconnue. Deux théories existent. Celle de Zenker-Warthin et celle de A. L. Taylor.

L'auteur rapporte l'histoire de cas d'un homme de 47 ans souffrant depuis deux ans de douleurs épigastriques- non influencées par l'alimentation ou l'alcool. La radiologie fut négative; cependant un second cliché a montré une image lacunaire dans la portion centrale de l'estomac. Le patient subit une gastrectomie subtotale. L'examen histologique a révélé du tissu pancréatique. Diagnostic final: hamartoma myo- épithélial de l'estomac.

ZUSAMMENFASSUNG

Das Vorkommen von ueberzaehligen oder Nebenbauchspeicheldruesen ist seit dem Jahre 1859 bekannt.

Hans Albrecht bezeichnete im Jahre 1904 alle Knoetchen versprengten Gewebes, ob sie die dem Pankreas eigene Struktur zeigten oder nicht, als Hamartome.

B. Earl Clarke schlug im Jahre 1940 vor, alle typischen Veraenderungen dieser Art im Magendarmkanal "myoepitheliale Hamartome" zu nennen. Diese Bezeichnung wird jetzt von medizinischen Autoren allgemein akzeptiert. Bis zum Jahre 1940 wurden 370 Faelle berichtet.

Die genaue Ursache der Erkrankung ist unbekannt. Zwei Theorien sind aufgestellt worden, naemlich die Zenkersche [1861], die von *Warthing modifiziert* wurde, und die im Jahre 1927 von A. L. Taylor entwickelte. Zenker bestand darauf, dass eine anormale Bauchspeicheldruesenanlage sich in der Naehe des primitiven Pankreasdivertikels entwickelte, sich waehrend des Darmachstums von seinem urspruenglichen Sitz trennte und sich schliesslich im Magen oder Zwoelffingerdarm festsetzte. Taylor nahm an, dass auf Grund eines Entwicklungsfehlers das Epithel des primitiven Darmrohres an einen Ort auftritt, wo es eigentlich nicht hingehoert; dies ist eine angeborene Heterotopie, ein Entwicklungsfehler des foetalen Ektoderms. Befindet sich das verschleppte Gewebe im Magen, so tritt es meist als flache Scheibe oder Knoetchen am oder in der Naehe des Pylorus auf. Seltener erscheint es im Fundus des Magens. Die Veraenderung ist schwer aufzufinden, und die Roentgenuntersuchung bietet nur geringe Hilfe. Eine genaue Diagnose kann auf keine andere Weise als durch mikroskopische Untersuchung des Gewebes, das durch Operation oder Obduktion gewonnen wird, gestellt werden.

Es wird ueber den Fall eines 47 jaehrigen Mannes berichtet, der seit zwei Jahren an Schmerzen in Epigastrium litt, die in keiner Beziehung zur Nahrungsaufnahme standen, aber durch alkoholische Getraenke verschlimmert wurden. Roentgenaufnahmen, die im Beginn der Krankheit gemacht wurden, ergaben einen negativen Befund. Eine zweite Untersuchung kurz vor der Aufnahme ins Krankenhaus zeigte aber einen Fuellungsdefekt im Antrum des Magens. Die Klinische und die Laboratoriumsuntersuchung

gaben keine sichere Auskunft. Eine subtotale Magenresektion ermoeglichte die Entfernung einer Geschwulst im Antrum. Die Schnitte zeigten pankreatische Acini und viele druesengangaehnliche Gebilde. Die engueltige Diagnose war "myoepitheliales Hamartom des Magens".

RESUMEN

Se han reconocido desde 1859 páncreas aberrantes o accesorios.

Han Albrecht acuñó en 1904 el término "hamartoma", para incluir cualquier nódulo de tejido aberrante con estructura peculiar o no de tejido pancreático.

B. Earl Clarke llamó en 1940 "hamartoma mioepitelial" a todas las lesiones del tracto gastrointestinal. Esta designación es ahora aceptada generalmente por los autores médicos. A partir de 1940 han sido comunicados 370 casos.

La etiología exacta de la lesión es desconocida. Dos teoría han sido emitidas, la de Zenker (1861) modificada por Warthin y la de A. L. Taylor, dada a conocer en 1927. Zenker pretendió la formación de una "inclusión" pancreática anómala cerca del divertículo pancreático primitivo, que desplazada de su lugar de origen por el crecimiento intestinal fuera alojada en el estómago o el duodeno. Taylor afirmó la ocurrencia de un desarrollo anormal, determinando la aparición de epitelio del tubo digestivo primitivo en situación que no le corresponde propiamente, heterotopia congénita por desarrollo anormal del ectodermo fetal. Cuando el tejido desplazado se localiza en el estómago, se presenta muy frecuentemente como una placa plana o nódulo en el píloro o cerca del mismo. Se presenta con menor frecuencia en el fondo del estómago. La identificación es difícil y poca ayuda ofrece la rontgenología. No puede lograrse nunca el diagnóstico exacto, excepto por el examen microscópico del tejido obtenido por operación o autopsia.

Se presenta un caso de un individuo de 47 años de edad, con antecedentes de dolor epigástrico en los últimos dos años, no relecionado con la ingestión de alimentos pero agravado por las bebidas alcohólicas. Rontgenogramas negativos al iniciarse la enfermedad, pero mostrando un defecto de llenado en la porción antral gástrica poco antes de su ingreso al hospital. El examen físico y el laboratorio no proporcionan información definida. La gastrectomía subtotal permitió la remoción de una masa situada en la porción antral gástrica. Esta masa mostró al corte acinis oancreáticos y muchas estructuras tubuliformes. Se hizo el diagnóstico final de hemartoma mioepitelial gástrico.

RIASSUNTO

Pancreas aberranti o accessori sono stati descritti sin dal 1859. Il termine *amartoma* fu coniato da Hans Albrecht nel 1904 ed includeva qualsiasi nodulo di tessuto aberrante sia che presentasse la peculiare struttura del tessuto pancreatico o no.

Nel 1940 B. Earl Clark propose di chiamare "*amartoma mio-epiteliale*" tutte le tipiche lesioni del tratto gastro-intestinale. Questo termine é oggi generalmente accettato nella letteratura medica che fino al 1940 ha riportato 370 di ta casi.

La esatta etiologia della lesione é sconosciuta. Due teorie sono state avanzate, quella di Zenker (1861), modificata da Warthin, e nel 1927 quella di A. L. Taylor. Zenker sostiene l'origine della lesione da una anomala appendice del primitivo diverticolo pancreatico, appendice che si distacca dalla sua sede di origine man mano che lintestino si sviluppa in lunghezza e per tanto viene a ritrovarsi nello stomaco o duodeno. Taylor sostiene il concetto di un errore embronale in virtù del quale l'epitelio del primitivo tubo digestivo appare in una sede cui non appartiene; questa é propriamente una eteropia congenita, un errore nello sviluppo dell'ectoderma fetale.

Quando il tessuto ectopico é situato nello stomaco, generalmente si presenta come una placca pianeggiante o come un nodulo, allogati nel piloro o nelle sue

vicinanze. Meno frequentemente si presenta nel fondo gastrico. La sua identificazione é difficile e le ricerche radiologiche offrono scarso aiuto. La diagnosi non può essere che microscopica su tessuti prelevati al tavolo operatorio o in sala autoptica.

E' presentato un caso di un uomo di 47 anni, con sofferenze epigastriche datanti due anni, sofferenze indipendenti dai pasti ma aggravate da bevande alcooliche. Gli esami radiologici eseguiti all'inizio della malattia furono negativi, ma ripetuti subito prima il suo ricovero in Ospedale, dimostrarono un difetto di riempimento dell'antro gastrico. L'esame fisico e quelli di laboratorio non particolarmente significativi. La resezione gastrica subtotale ha rimosso una massa occupante la porzione antrale dello stomaco. Le sezioni microscopiche hanno dimostrato la presenza di strutture acinose e tubulari. La diagnosi finale é stata di emartoma mio-epiteliale dello stomaco.

SUMÁRIO

O pancreas acessorio ou aberrante é conhecide desde 1859. O termo hamartoma foi creado por Hans Albrecht em 1904 com o intuito de catalogir todos os nódulos de tecido aberrante, muito embora sua estructiera seja ou não peculiar as tecido pancreatico.

Em 1940 B. Earl Clark propoz a denominacão de "myo-epithelial hamartoma" para todas as lesões tipicas do sistema gastrointestinal. Essa designação é atualmente aceita pelos autôres em geral. Até 1940 foram publicados aventadas 370 casos similares. A etiologica exáta da lesão não e conhecida. Duas teorias foram aventadas—a de Lenker (1861), modificada por Warthin, e a de por warthin e a de A. L. Taylor, promulgada em 1927. Zenker afirmou que se formava um *anlage* pancreatico proximo as primitivo diverticulo pancreatico, o qual se separava de seu ponto de origem, á medida que o intestino desenvolvia, e eventualmente se implantava no estomago ou duodeno. Taylor supunha que o aparecimento de epitélio do primitivo tubo gastrointestinal em um sitio anormal deriva de um erro de desenvolvimento; isto constitúe a heterotopia congenita—um erro no desenvolvimento do ectoderma fetal. Quando o tecido erroneamente implantudo se localisa no estomago, na maioria das veges aparéce como uma placa chata ou como um nódulo, no pilóro ou proscimo á ele. Menoz vezes, aparéce no fundus do estomago. A identificacão é dificil e o exame radiologico é de ponco auxilio. O diagnostico exáto é somente obtido pelo exame microscópico do tecido, obtido quer durante a operação ou durante a autopsia.

Um caso é apresentado de um paciente do sexo masculino, com 47 anos de idade, sofrendo desde 2 anos atraz de dôr na região epigastrica, não relacionada com a ingestão de alimentos, mas agravada pelas bebidas alcoolicas.

Radiografias tomadas no inicio da doença foram negativas, mas um segundo exame, feito um pauco antes do internamento no hospital demonstrou um defeito de enchimento na porcão antral do estomago. Os exames fisicos e de laboratorio não deram informação definida. A ressecção gastrica subtotal permitui a remocaco de uma massa da região antral. Córtes neisa massa mostraram acinos pancreaticos e muitas estrutriras semelhantes a ductos. O diagnostico final foi de hamartoma do estomago.

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The Surgical Approach to Glaucoma

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ALL ophthalmologists agree that during the two centuries or more in which glaucoma has been studied, little has been learned regarding the fundamental reasons for the establishment of the disease. We are led to such a conclusion by a revision of the long period of early research relative to glaucoma, as well as by the work of later investigators who have studied the disease and who all were finally convinced that the cause of the condition transcends our knowledge. Even the name "glaucoma," taken from the word "glauco" (green), is so misleading that many have suggested that the terminology associated with the condition should be abandoned altogether, along with many phases of its antiquated treatment.

In 1727, Pourfour de Petit gave origin to the theory that glaucoma was due to a derangement of the sympathetic nervous system. Reporting upon the work of several contemporaries, he contended that a division of the cervical sympathetic nerve served to reduce the tension in cases of glaucoma. That this operation failed to do this was indicated by the fact that the procedure soon fell into disuse. Regardless of this, Von Graefe, suspecting that a derangement of the cervical sympathetic nerves was at least one of the causes of glaucoma, mentioned in his archives of 1868 that experiments done upon animals tended to show that stimulating the severed ends of the cervical sympathetic nerve between the superior and the middle cervical ganglia influenced intraocular tension. After this, all investigation seemed to lie dormant until 1897, when Jonnisco reported a series of operations for the relief of glaucoma involving the removal of the sympathetic nerve lying between the upper and middle cervical ganglia.

So far as I can learn, Abadie was the first to do resections of the superior cervical ganglion for the relief of glaucoma, and his experience convinced him that he had discovered a cure for the disease. Soon, other continental surgeons were either severing the cervical sympathetic nerve or dissecting out the superior cervical sympathetic ganglion itself. No good results were reported from this procedure; the operation, therefore, again fell into disuse, and the sympathetic nervous system as a possible etiologic factor in primary glaucoma was for a time discredited. Then, as if to complete the cycle, Lagrange in 1925, Hamburger in 1930, and the now Sir Stuart Duke-Elder (1941) again directed attention to the sympathetic nervous system as being at least suggestive of the cause of primary glaucoma. At about the same time, Duane, the translator of Fuchs' book, expressed his confidence in the supposed fact that the primary cause of glaucoma was to be found in a disturbance of the sympathetic nervous system. Such an opinion by so noted an authority seemed to complete a cycle carrying us back to where we were in the early eighteenth century.

Should we be led to presume, in the final analysis, that glaucoma is primarily due to derangement of the sympathetic nervous system, surgical cure of the condition would be far from feasible. In attempting relief of glaucoma by operating along the various tracks of the sympathetic nervous system, the two areas to be most dealt with would be the upper and middle cervical ganglia and the ophthalmic or ciliary ganglion, considered by some to be responsible for glaucoma. While an accurate knowledge of the anatomy of this region makes the cervical

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ganglia much more accessible than the ophthalmic ganglion, even here difficulties exist The pneumogastric and the sympathetic nerves are often the same size in this region of the neck, and they are sometimes enclosed in the same sheath, in which case the only point of differentiation between the two would lie in the spindle-shaped superior ganglionic cells of the sympathetic nerve, which are found only by opening the sheath and following the nerve upward

The study of the ophthalmic or ciliary ganglion becomes more academic than that of the cervical ganglia because of its absolute inaccessibility in the living subject In the cadaver it is usually found lying between the optic nerve and the external rectus muscle, where it assumes a size no larger than that of a pinhead Even in the cadaver, it is almost impossible to find this ganglion if there is any fat left in the orbit, and this fact indicates a greater problem with the living, in whom it may be considered entirely inaccessible

It is, of course, impossible to predict what the future may hold in ophthalmic surgery, but a review of the past will indicate that the numerous accidents following operation upon the cervical sympathetic drove it into obsolescence, even though a large number of American ophthalmologists, among whom were DeSchwinetz, Ball, and Wilder, either practiced it personally or gave approval to it The latter author wrote extensively on the subject and, as an admirer of Axenfeld, who practiced the operation, gave assent to it in his statement that " there is obtained by the operation in simple glaucoma, a definitely important result even where other operations had been employed "

All ophthalmologists have had glaucoma patients who seemed to have been losing ground gradually regardless of the type of therapy used In such instances one is justified in no longer temporizing with miotic therapy and should fall back upon the following proved knowledge of the anatomic points involved in the process

The fact is conclusive that anything which interferes with the normal drainage from the eye may end in primary glaucoma It is obvious to all serious-minded ophthalmologists that a lack of balance between the secretion of the intraocular fluid and its normal escape from the eye often creates excessive intraocular tension We may now feel quite sure that the normal intraocular fluid is largely given off from the blood vessel of the ciliary body and we know that it escapes from the eye through various venous channels, among which are the spaces of Fontana and the canal of Schlemm This vessel, not containing blood, always remains open in the normal state and filters out of the eye sufficient intraocular fluid to maintain a balance, but when it becomes obstructed, so that a normal outflow does not occur, a glaucoma soon results

It is worth while to glance further at the anatomic reasons which often permit surgeons to relieve glaucoma regardless of their lack of knowledge of the actual cause First, one may begin with the premise that the most common cause of obstruction of Schlemm's canal is pressure upon it by the base of the iris One of the reasons for this is that as age advances the lens becomes enlarged in all diameters, which causes it to crowd the space originally allotted to it, thus blocking the iris angle By a process of simple mechanics, the following phenomena will then be likely to occur The anterior chamber, containing a smaller amount of fluid than does the posterior chamber, exerts only a limited degree of pressure backward, on the other hand, the fluid in the posterior chamber, by its greater volume, presses forward with such intensity that it cannot be counterbalanced by resistance of the lesser amount of fluid in the anterior chamber Thus the lens, following the line of least resistance, is gradually carried forward, encroaching more and more upon the anterior chamber and thereby crowding the iris angle, reducing normal drainage by closing the spaces of Fontana and Schlemm's canal and ending in the gloomy picture presented by glaucoma. Coincident with this process may be an alteration of the intraocular fluid, so that it contains more cellular material than is normally present. This adds mechanically to the existing obstruction by making it more difficult for the intraocular secretions to pass through the narrowed iris angle.

Now, regardless of all their floundering in the dark, ophthalmologists are pretty well agreed that this mechanical picture is valid and can be used to great profit in the treatment of the glaucomatous patient. Nearly all ophthalmologists now believe that under conditions of this kind surgical intervention is the only possible hope for the prevention of blindness in patients to whom long-continued therapeutic measures have failed to bring relief.

Three methods of surgical attack for primary glaucoma are pretty well established. The first consists in attempts directed toward the repromotion of normal drainage by way of the canal of Schlemm and the spaces of Fontana. This has been accomplished by iridectomy more often, perhaps, than by any other procedure. The mechanical rationale of the second method has as its purpose a reestablishment of new channels of drainage by way of the suprachoroidal space. In the hands of many surgeons cyclodialysis has definitely proved that this approach is effective in a large percentage of cases. By the third method, in innumerable instances, new avenues of drainage are being opened up through extraocular routes by scleral trephining, by transfixion of the iris into corneal or scleral wounds and by iridencleisis. Aside from these three methods and their modifications there remains only surgical tampering with sympathetic nerves and their ganglia, which, as I have already stated, should be viewed with great disfavor in the light of present knowledge.

In reference to the method first mentioned, i.e., iridectomy, I have for several years limited the use of this operation to acute inflammatory glaucoma and to chronic simple glaucoma in patients threatened with cataract. In such instances I have, to the best of my ability, followed the technic originated by Von Graefe; that of making vigorous traction on the iris, so as to detach it somewhat from its base before incising it. I have every reason to believe that in cases of beginning cataract associated with primary glaucoma the broad iridectomy, accompanied by sufficient traction to pull the iris away from the ciliary body as a second step in the iridectomy, is a sound procedure, and I have found that it will usually reduce the tension. In the event that it fails to do this, which in my experience occurs only in a small percentage of cases, I have had to resort to cyclodialysis or sclerocorneal trephining, and even these, as any surgeon knows, will occasionally end in failure.

It is my opinion that cyclodialysis is the operation best suited to low grade glaucomas. The object of this procedure is to establish a passage between the anterior chamber and the suprachoroidal space, and if the operation is properly done the result is usually favorable. The most important step in this operation consists in separating the ciliary body from its attachment, thereby making a breach through the pectinate ligament. I have noticed that surgeons, when discussing cyclodialysis, almost invariably fail to give an explanation of the manner in which intraocular fluid escapes after this operation. If the method of egress of the aqueous is not understood, the procedure becomes an empiric one. Knowledge of a discovery made by Treacher Collins and Stephan Mayow makes the purpose of this operation clear. Prior to 1925 these investigators reported that india ink, when injected into the anterior chamber, escaped through the crypts at the base of the iris and thence through the vortex veins. This is an explanation, based on simple mechanics, of the manner in which the suprachoroidal space may be utilized as an avenue to carry fluid from the anterior chamber to the vortex veins.

There is very little pain associated with

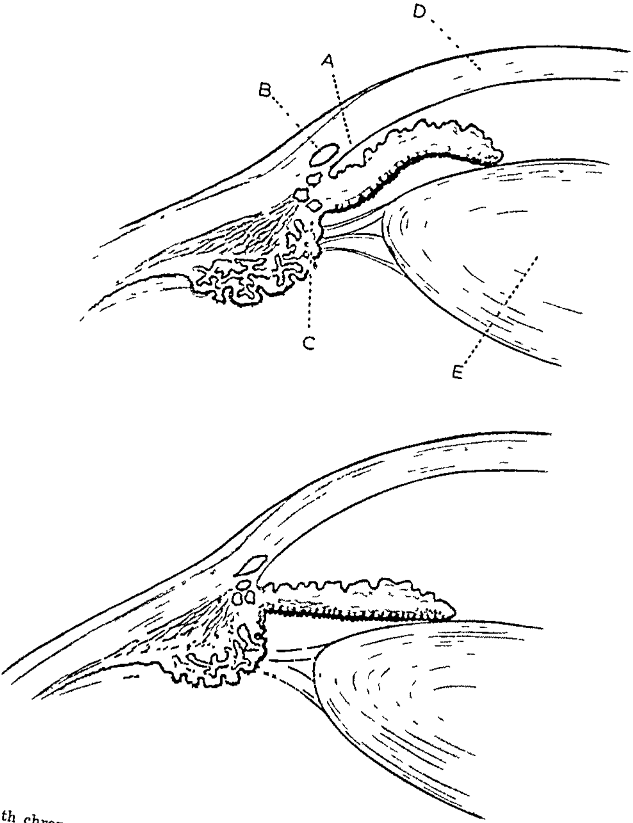

Fig 1—Eye with chronic simple glaucoma, showing an almost complete obliteration of the iris angle (*A*) *B*, canal of Schlemm, *C*, position of spaces of Fontana; *E*, crystalline lens; *D*, cornea. Below, cross sections of iris angle together with position of the iris in the normal subject. Schematic

cyclodialysis, and unless the patient is unruly it should be performed with local anesthesia. The eye may be anesthetized with a 4 per cent solution of cocaine, after which a 1 per cent solution of novocaine may be injected at the site of the incision. This will prevent even the slightest pain. A speculum is then inserted, and a fine sharp pointed knife is made to penetrate the sclera. Care should be taken during this step to see that the choroid is injured as little as possible. A small thin curved spatula is then introduced through the scleral wound and is carried slowly inward between the ciliary body and the sclera until it appears in the anterior chamber. With a to-and-fro movement of this instrument, the ciliary muscle is then gradually detached so as to open up an area for drainage. During this step great care must be taken not to injure the crystalline lens. The conjunctival flap, previously prepared, is now returned to its bed and sutured in place.

At various times I have noticed in the literature the suggestion that cyclodialysis may be done through a scleral trephine opening. After having practiced this step I am led to believe that the method is not so productive of good results as is cyclodialysis performed through an incision made with a small sharp knife. It seems probable to me that when the trephine is substituted for the incision there is more likelihood of breaking through the choroid. Such an accident would be apt to cause intraocular hemorrhage and might also interfere with choroidovenous absorption of the intraocular fluid itself. Though it has been contended by some surgeons that the suprachoroidal fistulization created by cyclodialysis is not often permanent, the operation is gaining steadily in popularity and every year is more widely regarded as an approved surgical measure for low grade glaucoma.

For patients who have simple glaucoma with slowly narrowing fields, sclerocorneal trephining has become very popular of late, though for a long period, because of postoperative complications, it had been largely abandoned. The operation consists of three steps, which must be taken with great nicety or the results will be as disappointing as they were formerly reported to be.

1. Making the flap. Care must be taken to make this of sufficient size to maintain a large subconjunctival area for absorption. With this in mind, I make my flaps from 20 to 25 mm. long and carry them back 15 or 20 mm. from the sclerocorneal margin. One must be careful not to tear the flap; otherwise, fistulization over the site of the trephine opening will prevent a good result, as such a breach will heal with adhesions which may close the trephine opening.

2. Splitting the cornea. This important step, to the inexperienced surgeon, may be a difficult procedure; it will have no terrors for one who has once successfully performed it, as he will note how easily it is accomplished if the conjunctiva is carefully elevated and the dissection is not allowed to pass too far into the cornea. A 2 mm. incision into the corneal tissue will serve its purpose well; an incision carried inward farther than this may penetrate the cornea, which would prevent the making of a proper trephine button. In such an event the corneal incision will soon close, thereby defeating the purpose of the operation.

3. This step consists in properly trephining the cornea. Here the surgeon must see to it that his trephine opening is not too large. In my hands, a 2 mm. trephine has served better than either the larger or the smaller size, and I now select this size of trephine almost exclusively. My trephines are passed through a control of my own design which keeps the blade of the trephine from slipping from side to side. The trephining instrument must be so sharp that little pressure is needed to cut a button through the cornea and the sclera. After a trephining such a button may be lost in the anterior chamber, but, although this has happened several times in my own practice, I have never seen any harm come from it. When the trephine opening has been properly made the iris immediately presents itself, having been forced outward by the aqueous humor. The protruding portion may then be grasped with a fine forceps, after which it is drawn slightly into the trephine opening and incised. Though Elliott advised against this step, it appears to me to conform to the

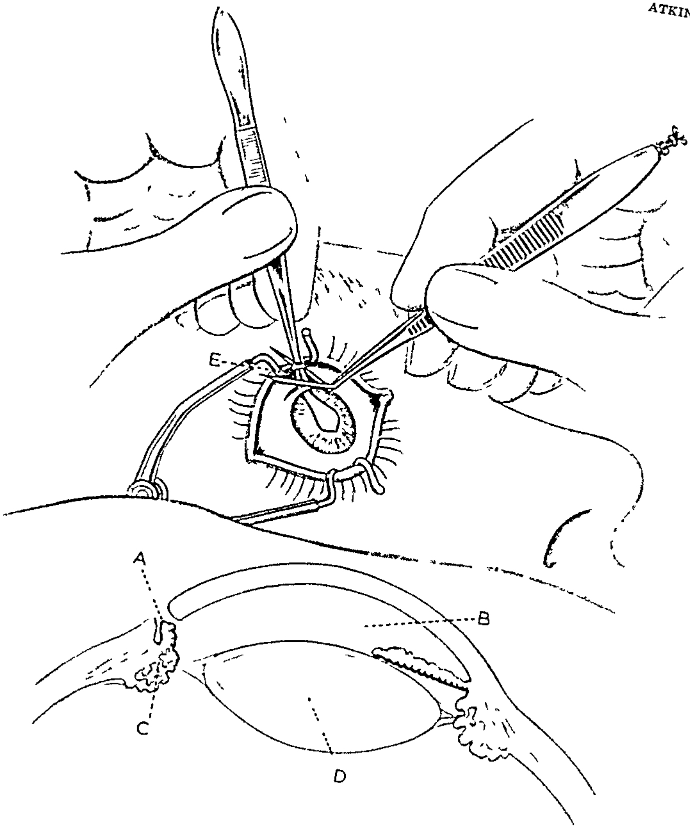

Fig 2—First step of iridectomy for glaucoma as performed by Von Graefe and later German surgeons *B*, anterior chamber, *D*, crystalline lens; *C*, ciliary body. Iris drawn outward (*E*) and half amount to be removed incised Should incision be a complete instead of partial, iris would be left much as represented by *A*

principles of good mechanics, as it pulls the base of the iris away from the constricted iris angle. The conjunctiva should now be replaced, and two or three stitches should close the conjunctival opening. From the standpoint of mechanics, sclerocorneal trephining performed in this manner seems sound, and in several years I

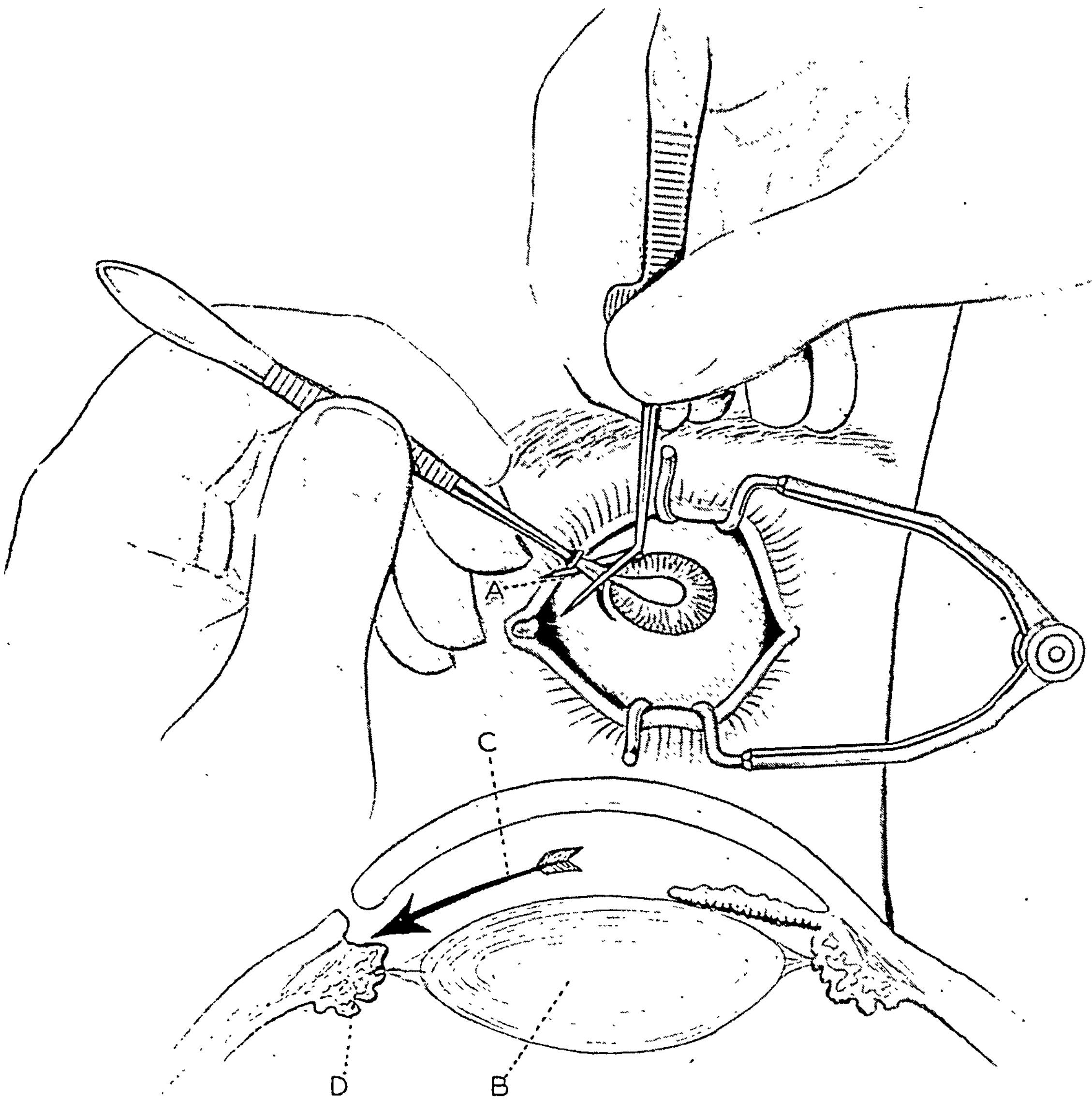

Fig. 3.—Completion of iridectomy for relief of glaucoma as done by Von Graefe and later German surgeons. *B*, crystalline lens. Half of portion of iris to be removed has been divided. Remaining iris is then drawn outward at an angle of 45 degrees where it is being incised. *A*, iris drawn to an angle of 45 degrees preparatory to its complete incision as represented by the arrow *C*.

have not encountered any of the complications which formerly carried the operation into obsolescence.

Of the iris inclusion operations, iridencleisis has steadily gained favor during the last three decades. This procedure is a somewhat modified revival of that originated sixty years ago by Critchett. A somewhat similar operation for the formation of an artificial pupil was in use several years prior to this, a description of which may be seen in the second edition of my book *External Diseases of the Eye*. The technic as now applied to glaucoma differs from that used by the older surgeons in that the incision is made behind the sclerocorneal margin, and that the suture to keep the protruding iris

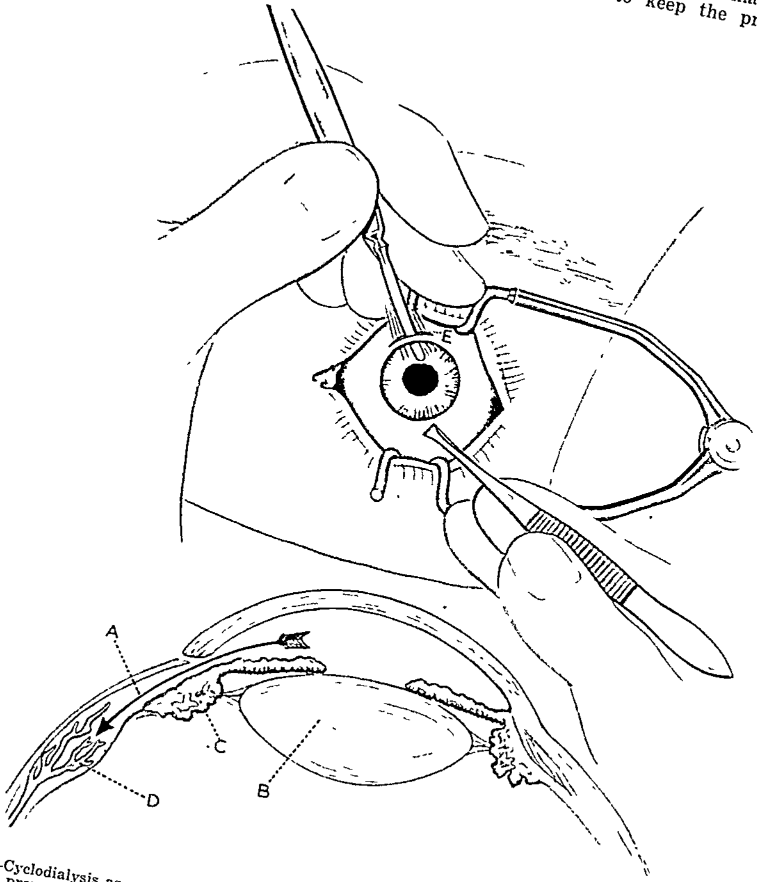

Fig. 4.—Cyclodialysis as performed on a glaucomatous eye Schematic. *B*, crystalline lens. Small flap has been prepared and small incision (*E*) made through the sclera; spatula has separated the ciliary body (*C*) through one-eighth of its circumference. Arrow *A* indicates escape route for pent-up intraocular fluid from the anterior chamber into the vortex veins (*D*).

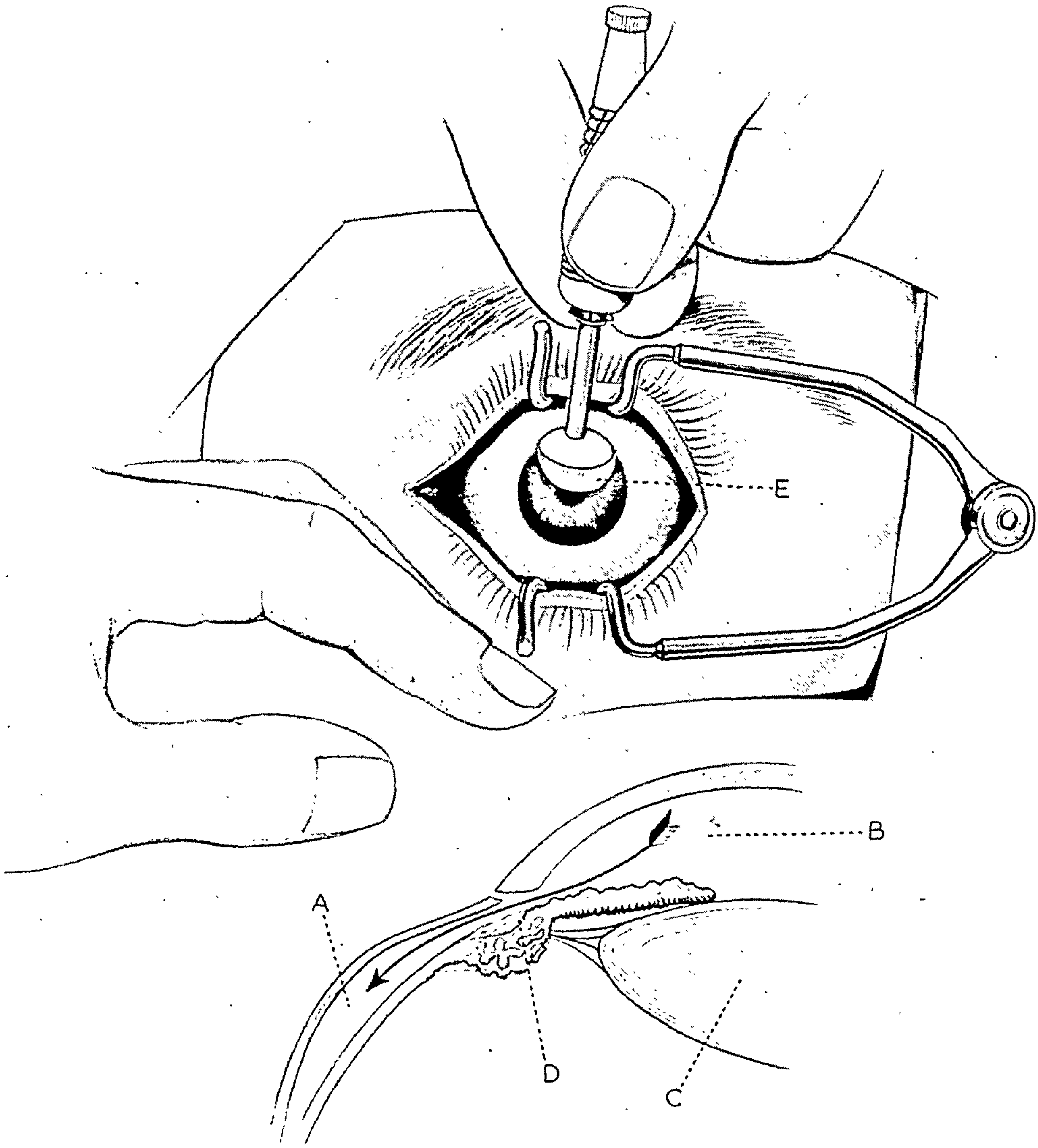

Fig. 5.—Glaucomatous eye upon which a sclerocorneal trephining is being done. *B*, anterior chamber; *C*, crystalline lens; *D*, ciliary body. Trephine being used to cut sclerocorneal button. A flap (*E*), previously prepared, has been turned down over cornea. *A*, escape route of intraocular fluid into newly formed subconjunctival space.

in place is omitted, since the normal resiliency of the sclera is now known to make this unnecessary. It might seem that purposely incarcerating an iris in a wound, when such a contingency occurring accidentally in other operations is deplored by so many surgeons, would be a false move, but in reviewing the literature I do not find any descriptions of patients with postoperative iridocyclitis and sympathetic ophthalmias occurring as complications of planned iris incarcerations.

While with the remainder of the iris inclusion operations I have had only a limited experience, it is my personal opinion that their place in ophthalmic surgery is rather well fixed and that they are comparatively free from danger, even though the theory concerning the ominous possibility of sympathetic ophthalmia as an aftermath of the incarceration of iris tissue into corneal and scleral wounds is still often mentioned.

In view of the many different angles to be considered, the surgeon has a great deal of latitude in the selection of his operation for the relief of glaucoma of any type, but candor compels one to admit that one who operates for this condition can never be entirely sure of his ground. In selecting the procedure for a given case, the type of visual field defect manifested by the patient may be considered one of the truest guides. It is my personal opinion that cyclodialysis is best adapted to simple noninflammatory glaucomas accompanied with marked concentric contraction of the visual fields. My experience also leads me to believe that when a decided Roenne nasal step is seen without proportionate contraction of the peripheral fields and when an enlarged and somewhat elongated blind spot is present, an attempt to establish new avenues for drainage through external ocular routes, preferably by sclerocorneal trephining, is the method of choice. Regardless of this, however, the diversity of opinion with regard to this suggestion puts each surgeon on his own resources, and he should feel justified in adopting the method which coincides with his individual experience and is based upon knowledge of the mechanics of the disease.

SUMMARY

Though at first little understood, glaucoma has been under observation by ophthalmologists for over two centuries During the early period of this study the disease was generally thought to be due to a disturbance of the sympathetic nervous system. Such an opinion, after many recessions, is still occasionally brought forward by leading ophthalmologists. Thus far, nothing has been accomplished by neurosurgical procedures for relief of the condition, though for many years the sympathetic nervous system was attacked by way of the cervical sympathetic nerve trunk and the upper and middle cervical sympathetic ganglia, with unfavorable results.

Regardless of the ineffective surgery of the past, it is a well recognized fact that, although the cause of glaucoma is not known, surgeons at least are familiar with the anatomic changes found associated with the disease. These usually consist of one or more of the following changes: first, enlargement of the crystalline lens owing to its continuous growth, which normally begins in early life; second, crowding forward of the iris by this enlargement and consequent narrowing of the iris angle, and third, cutting off of the normal drainage of the eye by a crowded iris angle, with consequent encroachment upon the canal of Schlemm, the spaces of Fontana and other lesser avenues of escape from the eye of the intraocular fluids. An attack of glaucoma may then be brought about as a mechanical response to these changes by the sympathetic nervous system in patients subject to attacks of grief, worry or shock.

Should all other measures fail to overcome the condition, operation is indicated, with a view to reestablishing normal drainage of intraocular fluids. The steps to be considered for the relief of glaucoma are as follows: First, in cases of acute inflammatory glaucoma, attempts should be directed toward freeing the iris angle and relieving pressure upon the canal of Schlemm by a broad iridectomy done after the manner of Von Graefe, not in the perfunctory manner now too often practiced. Second, in cases of low grade glaucoma with slowly narrowing fields, attempts should be made to establish new avenues of drainage by way of the suprachoroidal space. This is often accomplished by cyclodialysis. By this procedure the ciliary body is separated from its attachment and a breach is made through the pectinate ligament, thus opening an avenue for drainage between the anterior chamber and the suprachoroidal space. Third, a method often resorted to but usually only when other operations have failed consists in creating new avenues for the escape of pent-up fluids by scleral trephining or by iridencleisis. These procedures have undoubtedly brought good results in many instances, though in reviewing the literature one observes that complications attending them have been numerous.

In selecting an operation for glaucoma, the surgeon should be entirely familiar with current knowledge regarding fields, but as no two cases are alike he has great latitude in choosing his operation. Every glaucoma patient becomes a grave responsibility, and the surgeon must be conscious of this and plan his management carefully. With the tension and the fields as indices to the choice of operation and by adhering to sound surgical principles based on a thorough knowledge of the mechanics of the disease, he is on the only ground he may occupy in the treatment of this most aberrant of all surgical eye diseases.

RÉSUMÉ

Le glaucôme, ignoré au début, est connu depuis deux siècles par les ophtalmologistes. On croyait la lésion consécutive à une perturbation du sympathique. D'aucun le croient encore, aucune intervention chirurgicale sur les nerfs n'a donné de bons résultats, quel que soit le procédé employé. Si l'étiologie est inconnue, par contre la symptomatologie l'est bien. Il existe d'abord un agrandissement du cristallin; cet agrandissement repousse l'iris et donne son angle. Un iris repoussé inhibe le drainage normal de l'oeil, d'où nuisance au canal de Schlemm, les espaces de Fontana et les autres plus petits conduits. Le shock, la peine, le souci sont les causes déterminantes. Devant l'insuccès de méthodes thérapeutiques, la chirurgie est recommandée pour rétablir le drainage normal du liquide intraoculaire.

Dans le glaucôme aigu, le premier traitement consiste à dégager l'angle de l'iris et d'enlever la compression sur le canal de Schlemm par une iridectomie élargie à la façon de Von Graefe. Dans le cas plus bénin, pour faciliter le drainage, on pratique de nouveaux passages dans l'espace suprachoroidal. Ceci se fait par la cyclodialyse. Si les méthodes usuelles ne réussissent pas, on pratique l'ouverture de l'iris.

Le chirurgien qui opère un glaucôme doit connaitre son champ d'action se basant cependant sur le cas particulier pour le choix du traitement à employer. Le glaucôme est très sérieux. Le chirurgien doit peser d'avance les conséquences de choix du traitement employé.

ZUSAMMENFASSUNG

Das Glaukom ist seit ueber zwei Jahrhunderten, wenn auch im Anfang nur wenig verstanden, Gegenstand ophthalmologischer Beobachtung. In der fruehen Periode dieser Untersuchung wurde die Krankheit allgemein fuer eine Stoerung des sympathischen Neversystems gehalten. Diese Meinung wird nach vielen Unterbrechungen noch immer gelegentlich von fuehrenden Augenaerzten vertreten. Die Nervenchirurgie hat bis heute nichts erreicht, was zur Behebung der Erkrankung beitruege, obgleich durch viele Jahre hindurch das sympathische Nervensystem auf dem Wege ueber den sympathischen Halsnervenstrang oder ueber die oberen und mittleren sympathischen Halsganglien angegangen worden ist. Die Resultate waren unbefriedigend.

Ungeachtet des Versagens der chirurgischen Behandlung bleibt die allgemein anerkannte Tatsache bestehen, dass wir zwar nicht mit der Ursache aber doch

wenigstens mit den beim Glaukom vorliegenden anatomischen Veraenderungen vertraut sind. Diese bestehen gewoehnlich in einer oder mehreren der folgenden Veraenderungen:

1. Vergroesserung der Linse, bedingt durch ihr fortgesetztes normalerweise im fruehen Lebensalter einsetzendes Wachstum.

2. Vorwaertsverdraengung der Iris und damit Verengung des Iriswinkels als Folge der Vergroesserung der Linse.

3. Absperrung der normalen Drainierung des Auges durch die verdraengte Iris und damit Beengung des Schlemmschen Kanals, der Fontanaschen Raeume und anderer kleinerer dem Abstroemen der intraokulaeren Fluessigkeit dienenden Kanaele. Ein Glaukomanfall kann daher bei Kranken, die Kummer, Sorgen und Schock ausgesetzt sind, als mechanische Reaktion des sympathischen Nervensystems auf solche Veraenderungen zustande kommen.

Wenn alle anderen Massnahmen, eines solchen Zustandes Herr zu werden, versagen, ist ein chirurgischer Eingriff mit dem Ziel der Wiederherstellung eines normalen Abflusses der Augenfluessigkeit angezeigt. Zur Behandlung des Glaukoms sind die folgenden Schritte in Betracht zu ziehen:

1. Beim akuten entzuendlichen Glaukom sollen die therapeutischen Bemuehungen auf die Befreiung des Iriswinkels und auf die Entlastung des Schlemmschen Kanals mittels einer breiten Iridektomie und zwar nach dem von Graefeschen Verfahren (statt in der heute oft ausgeuebten oberflaechlichen Weise) gerichtet sein.

2. In leichten Glaukomfaellen mit langsam fortschreitender Verengung der Felder sollte versucht werden, neue Abflusswege ueber den suprachoroidalen Raum zu schaffen. Dies wird haeufig mit Hilfe der Zyklodialyse erreicht. Dieses Verfahren besteht in einer Trennung des Ziliarkoerpers von seinen Befestigungen und einer Durchbrechung des Lig. pectinatum iridis, wodurch ein Abflussweg zwischen der vorderen Kammer und dem suprachoroidalen Raume geschaffen wird.

3. Eine Methode zur Schaffung neuer Abflusswege fuer die abgesperrten Fluessigkeiten, auf die haeufig-wenn auch im Allgemeinen nur nach dem Versagen anderer Operationen-zurueckgegriffen wird, besteht in der Durchstechung der Sklera oder in der Iridencleisis.

Diese Verfahren haben zweifellos in vielen Faellen gute Resultate gehabt, wenn auch bei Durchsicht der Literatur festgestellt werden kann, dass die einhergehenden Komplikationen reich an Zahl sind.

Der Chirurg, der das in einem Falle von Glaukom anzuwendende Verfahren zu bestimmen hat, muss mit den heutigen Kenntnissen bezueglich der Sehfelder voellig vertraut sein, hat aber, da ja kein Fall dem anderen gleicht, eine umfangreiche Auswahl zur Verfuegung. Jeder Glaukomkranke stellt eine schwere Verantwortlichkeit dar, deren sich der Chirurg bewusst sein muss; sein Behandlungsplan muss daher sorgfaeltig abgewogen sein. Nur wenn er sich von den Befunden des Augendrucks und der Sehfelder bei der Auswahl der Operation leiten laesst, wenn er sich streng an gesunde chirurgische Grundsaetze haelt und mit dem Mechanismus der Erkrankung eng vertraut ist, nur dann steht der Chirurg auf festem Boden in der Behandlung dieser merkwuerdigsten aller chirurgischen Augenerkrankungen.

RESUMEN

El glaucoma ha sido observado por los oftalmólogos por más de dos siglos, aunque con poca compresión al principio. Se pensó primordialmente que la enfermedad era generalmente debida a un trastorno del sistema nervioso simpático. Esta opinión, después de muchos desistimientos, es aun ocasionalmente sostenida por los principales oftalmólogos como posible causa del glaucoma. Actualmente, nada ha conseguido la cirugía neurológica para alivio de la enfermedad, aunque por muchos años ha atacado el sistema nervioso simpático, actuando sobre la cadena simpática, cervical y el ganglio simpático cervical medio sin resultados favorables.

A pesar de los fracasos quirúrgicos del pasado, es bien reconocido el hecho de que, aun cuando no sabemos la causa del glaucoma, cuando menos nos hemos familiarizado con los cambios anatómicos que se encuentran en la enfermedad. Estos consisten ordinariamente en uno o más de los siguientes: (1) aumento del cristalino debido al continuo crecimiento que comienza normalmente en la edad temprana; (2) tal aumento aprieta el iris ocasionando el estrechamiento de su ángulo; (3) el ángulo apretado del iris interrumpe la canalización normal ocular, extendiéndose en consecuencia al canal de Schlemm, los espacios de Fontana y otras vías menores de escape ocular para los flüidos intraoculares. Un ataque de glaucoma puede producirse por consiguiente como respuesta mecánica a estos cambios por el sistema nervioso simpático, en pacientes sujetos a ataquea de pesadumbre, tristeza o choque.

Cuando todas las demás medidas hayan fallado en esta enfermedad, se encuentra indicada la cirugía con fines al restablecimiento de la canalización normal de los flüidos intraoculares. Deben considerarse para el alivio del glaucoma los pasos siguientes: (1) en el glaucoma los pasos torio agudo debe tratarse de liberar el ángulo del iris y aliviar la presión sobre el canal de Schlemm, mediante una amplia iridectomía hecha a la manera de Von Graefe, no a la manera perfuncional practicada frecuentemente ahora; (2) en casos de glaucoma de bajo grado con ligero estrechamiento de los campos, debe intentarse establecer nuevas vías de canalización a través del espacio supracoroideo, lográndose frecuentemente con la ciclodiálisis, procedimiento en que el cueropo ciliar es separado de su inserción y se hace una brecha a través del ligamento pestinado, abriendo en consecuencia una vía para canalización entre la cámara anterior y el espacio supracoroideo; (3) un método al que se recurre a menudo pero ordinariamente sólo cuando las otras operaciones han fracasado, consiste en crear nuevas vías para el escape de los flüidos bloqueados por trepanación escleral o por iridoclisis. Estos procedimientos han proporcionado indudablemente buenos resultados en muchas ocasiones, aun cuando al revisarse la literatura se observa que las comlicaciones inherentes a ellos han sido numerosas.

Al seleccionar una operación para glaucoma, el cirujano debe estar enteramente familiarizado con el conocimiento que atañe a los campos, pero como no hay dos casos iguales tiene amplia latitud para escoger su operación. Cada paciente de glaucoma constituye una grave responsabilidad, por lo que el cirujano debe tener conciencia de ello y meditar cuidadosamente su plan terapéutico. Con la tensión y los campos como índices para elegir una operación, y los principios quirúrgicos correctos basados en un conocimiento completo de la mecánica de la enfermedad, el cirujano se encuentra en el único campo que puede ocupar en el tratamiento de la más aberrante de todas las enfermedades quirúrgicas oculares.

RIASSUNTO

Sebbene dapprincipio poco compreso, il glaucoma é stato osservato dagli oftalmologi per oltre due secoli. Dapprima la malattia fu generalmente ritenuta secondaria a disturbi del sistema nervoso simpatico e tale opinione, dopo molte recessioni, é ancora occasionalmente avanzata da esimi oftalmologi. Fino al momento attuale a nulla hanno condotto i tentativi della neurochirurgia per quanto per molti anni il sistema nervoso simpatico sia stato attaccato via il simpatico cervicale ed i suoi gangli superiore e medio, con risultati sfavorevoli.

Indipendentemente dalla inefficacia della chirurgia del passato, é noto che sebbene noi non conosciamo l'eziologia del glaucoma, per lo meno siamo edotti delle modificazioni anatomiche della malattia. Tali modificazioni sono: Primo, un ingrandimento del cristallino dovuto al suo continuo sviluppo che generalmente comincia alla prima età. Secondo, un tale in-

grandimento del cristallino spinge liride in avanti restringendo in tal modo l'angolo irideo. Terzo, un ristretto angolo irideo, diminuisce il normale drenaggio dell-occhio, comprimendo il canale dello Schlemm, gli spazi del Fontana ed altre minori vie di drenaggio dei fluidi intraoculari. Un attacco di glaucoma può quindi seguire quale risposta meccanica a queste modificazioni anatomiche da parte del sistema nervoso simpatico in pazienti soggetti ad attacchi di angoscia, depressione o shock.

Nel caso tutte le altre misure fallissero, il trattamento chirurgico é indicato con l'obbiettivo di ristabilire il normale drenaggio intraoculare. I passi da fare sono: Primo, nel glaucoma infiammatorio acuto, dovrebbe tentarsi la liberazione dell'angolo irideo e alleggerire la pressione sul canale dello Schlemm con un'ampia iridectomia eseguita secondo la tecnica di Von Graefe, e non sbrigativamente come spesso oggi é praticata; Secondo, in casi di glaucoma lieve con lento restringimento dei campi, tentativi di nuove vie di drenaggio attraverso lo spazio sopracoroideo dovrebbero farsi. Questo spesso si raggiunge con una ciclodialisi. Con un tale procedimento il corpo ciliare é separato dai suoi attacchi ed una breccia é fatta attraverso il ligamento pettinato, aprendo così un passaggio fra la camera anteriore e lo spazio sopracoroideo. Terzo, un metodo al quale spesso si ricorre, ma di solito solo quando altre operazioni hanno fallito, consiste nel creare nuove vie di scarico ai fluidi attraverso una puntura della sclera o iridocleisi.

Questi procedimenti hanno indubbiamente dato buoni risultati in molte evenienze, sebbene le complicazioni citate nella letteratura siano numerose.

Nella scelta della operazione per glaucoma il chirurgo dovrebbe essere completamente familiare con le attuali conoscenze riguardanti i campi, ma poiché non due casi sono simili, egli ha una vasta latitudine di scelta della sua operazione. Ogni paziente di glaucoma é una grave responsabilità di cui il chirurgo deve essere conscio ed il suo piano di trattamento deve essere accuratamente ponderato. Avendo per indici la tensione ed i campi visivi ed aderendo ai principi chirurgici basati sulla completa conoscenza della meccanica della malattia, egli sarà sulla buona strada nel trattamento di questa che é la più atipica delle malattie chirurgiche dell'occhio.

SUMÁRIO

Ainda que á principio mal entendido, o glaucoma tem sido estudado pelos oftalmologistas por mais de dois seculos. Durante os primórdios de seu estudo, a doença era atribuida a um disturbio do sistema nervoso simpatico. Tal opinião, depois de muitos declinios, é ainda posta em voga por grandes oftalmologistas como causa suspeita do glaucoma. Ate o presente nada tem sido executado no campo da neuro-cirurgia para alivio da enfermidade, ainda que por muitos anos. O sistema nervoso simpatico tenha sido objecto de atos cirurgicos executados sobre o tronco nervôso simpatico cervical e sobre os ganglios simpaticos medio cervicais sem resultados favoraveis. Apezar da ineficácia da cirurgia no passado, é fato reconhecido que embora a causa do glaucoma, seja ignorada, suas repercussoes anatomias são familiares aos medicos. Estas usualmente consistem em uma ou mais das sequintes alterações: Primeiro, uma dilatação do cristalino devida ao seu continuo crecimento, o qual normalmente comeca na primeira idade. Segundo, tal alargamento do cristalino empúrra a iris para a frente, estreitando o angulo da iris. Terceiro, um angulo de iris amontoado impéde a drenagem normal do olho, dáhi advindo a invasão do canal de Schlemm, dos espaços de Fontana e de outras menores vias de escapamento dos fluidos intraoculares.

Uma crise de glaucoma pode se descebcadear como consequencia de uma resposta mecanica a essas mudanças dada pelo sistema nervôso simpatico em pacientes sujeitas a crises de pesar, aborrecimento ou chóque.

No hipotese de que todos as outras medidas fracassem para dominar o sindrome, a cirurgia está indicada para tentar restablecer a drenagen normal dos liquidos intraoculares. Os passos a serem considerados para aliviar o glaucoma são: primeiro, no glaucoma agudo inflamatorio, as tentativas devem ser feitas no sentido de libertar o angulo da iris e de aliviar a pressão sobre o canal de Schlemm com o suxilio de uma larga iridectomia feita com a tecnica de von Graefe e não do modo perfunctorio com que é acualmente praticada; segundo, nos casos de menor gravidade de glaucoma, de evolucão menos aguda, devem ser feitas tentivas para establecer novas vias de drenagem pela passagem do espaco supracoroidiano. Isso é muitas vezes consequido com a ciclodialise. Por meio desse processo, os corpos ciliares sao separados de seus sitios de implantacao e uma brécha e aberta atravéz do ligamento pectineo, abrindo assim uma via de drenagem entre a camara anterior e o espaco supracoroidiano. Terceiro, um mètodo util somente quando as outras operações gracassaram é o de abrir novas vias de escapamento de fluidos acumulados pela trepanação de esclerótica ou pela iridencleisis. Esses processor, indubitavelmente, produziram bons resultados em muitas circumcircunstancias, ainda que, revendo a literatura, observa-se que as complicacões em consequencia deles tem sido numerosas.

Na seleção de uma operacão para o glaucoma o cirurgião deve estar inteiramente familiarizado com os conhecimentos relativos ao campo, mas, como não ha dois casos semelhantes, eltem uma ampla latitude para a escolha de sua operação.

Cada paciento com glaucoma representa uma grave responsabilidade sobre os hombres do cirurgião que deve estar amplamente seguro da situação e dos planos com os quais a condição patologica deva ser cuidadosamenta combatida. Com a tensão e os campos como indice de escôlha de uma operacão e com a observancia de principios basicos, de conhecimento completo da enfermidade e de sua mecanica, o cirurgião esta no unico terreno que ele póde pisar no tratamento da mais aberrante de todas as doenças dos olhos.

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Preoperative and Postoperative Care in Gastric Surgery

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SURGERY has gone through several stages during the last fifty years. Until recently the emphasis was placed on mechanical knowledge, speed, and dexterity, and the surgeon had to be well versed only in anatomy and pathology. However, during the last two decades, physiology, physiochemistry and the laboratory have taken a more and more prominent place in the field of surgery. Because of these newer developments, the details of preoperative and postoperative care in gastric surgery have become more important than ever. They require a knowledge and understanding of physiochemical disturbances in the body brought on by gastrointestinal disease, anesthetics and trauma concomitant to surgery and surgical manipulations. Since these changes vary with each case, it is neither practical nor desirable to tabulate routine orders for their preoperative and postoperative care. As a matter of fact, to set up a routine not only would lead to many unnecessary procedures but might become a dangerous weapon in the hands of the less experienced. One should learn the basic principles whereby one can determine the exact needs of each patient and accordingly prescribe preoperative and postoperative measures for each case.

Physiochemical Tests Versus History and Physical Examinations.—Since our physiochemical knowledge in some of its aspects is still in flux and since a great deal more experimental work must be done before the true meaning of some physiochemical disturbances is understood, too many surgeons either ignore chemical tests entirely or place so much emphasis on them that the patient is forgotten in the maze of elaborate tests.

One need not go to either extreme. On the basis of a careful history and a painstaking physical examination, one should be able to tell what physiochemical changes have taken place, and to what extent, in the early conditions requiring gastric surgical procedures. As a matter of fact, whether the disease is early or advanced, the patient's general condition and history provide a much better index of his needs than are some of the complex laboratory data. The age, weight, strength and color of the patient, the turgor and quality of the skin, dryness of the mouth and tongue, the color and quality of the mucous membranes, the character of the eyes, the appetite, the history of thirst or loss of it, nausea or vomiting, the presence or absence of edema, the quality and number of stools, the amount and specific gravity of the urine, mental attitude, nervousness, lassitude and paresthesias, give a wealth of information concerning the physiochemical disturbances. From these one should be able to estimate whether there is need for fluids, electrolytes, amino acids and transfusion, and the amounts needed.

True, laboratory tests will be indicated in many cases, especially for patients who are poor risks; but these tests should be evaluated in the light of the patient's history and general condition, as they are at times misleading when taken alone. For example, hypoproteinemia may be more marked than the plasma protein determination indicates, or the patient may be more anemic than one may be led to believe from a high hemoglobin and red blood cell count—all of which may be

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No hipotese de que todos as outras medidas fracassem para dominar o sindrome, a cirurgia está indicada para tentar restablecer a drenagen normal dos liquidos intraoculares. Os passos a serem considerados para aliviar o glaucoma são: primeiro, no glaucoma agudo inflamatorio, as tentativas devem ser feitas no sentido de libertar o angulo da iris e de aliviar a pressão sobre o canal de Schlemm com o suxilio de uma larga iridectomia feita com a tecnica de von Graefe e não do modo perfunctorio com que é acualmente praticada; segundo, nos casos de menor gravidade de glaucoma, de evolucão menos aguda, devem ser feitas tentivas para establecer novas vias de drenagem pela passagem do espaco supracoroidiano. Isso é muitas vezes consequido com a ciclodialise. Por meio desse processo, os corpos ciliares sao separados de seus sitios de implantacao e uma brécha e aberta travéz do ligamento pectineo, abrindo im uma via de drenagem entre a mara anterior e o espaco supracoroidiano. Terceiro, um mètodo util somente quando as outras operações gracassaram é o de abrir novas vias de escapamento de fluidos acumulados pela trepanação de esclerótica ou pela iridencleisis. Esses processor, indubitavelmente, produziram bons resultados em muitas circumcircunstancias, ainda que, revendo a literatura, observa-se que as complicacões em consequencia deles tem sido numerosas.

Na seleção de uma operacão para o glaucoma o cirurgião deve estar inteiramente familiarizado com os conhecimentos relativos ao campo, mas, como não ha dois casos semelhantes, eltem uma ampla latitude para a escolha de sua operação.

Cada paciento com glaucoma representa uma grave responsabilidade sobre os hombres do cirurgião que deve estar amplamente seguro da situação e dos planos com os quais a condição patologica deva ser cuidadosamenta combatida. Com a tensão e os campos como indice de escôlha de uma operacão e com a observancia de principios basicos, de conhecimento completo da enfermidade e de sua mecanica, o cirurgião esta no unico terreno que ele póde pisar no tratamento da mais aberrante de todas as doenças dos olhos.

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Preoperative and Postoperative Care in Gastric Surgery

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SURGERY has gone through several stages during the last fifty years. Until recently the emphasis was placed on mechanical knowledge, speed, and dexterity, and the surgeon had to be well versed only in anatomy and pathology. However, during the last two decades, physiology, physiochemistry and the laboratory have taken a more and more prominent place in the field of surgery. Because of these newer developments, the details of preoperative and postoperative care in gastric surgery have become more important than ever. They require a knowledge and understanding of physiochemical disturbances in the body brought on by gastrointestinal disease, anesthetics and trauma concomitant to surgery and surgical manipulations. Since these changes vary with each case, it is neither practical nor desirable to tabulate routine orders for their preoperative and postoperative care. As a matter of fact, to set up a routine not only would lead to many unnecessary procedures but might become a dangerous weapon in the hands of the less experienced. One should learn the basic principles whereby one can determine the exact needs of each patient and accordingly prescribe preoperative and postoperative measures for each case.

Physiochemical Tests Versus History and Physical Examinations.—Since our physiochemical knowledge in some of its aspects is still in flux and since a great deal more experimental work must be done before the true meaning of some physiochemical disturbances is understood, too many surgeons either ignore chemical tests entirely or place so much emphasis on them that the patient is forgotten in the maze of elaborate tests.

One need not go to either extreme. On the basis of a careful history and a painstaking physical examination, one should be able to tell what physiochemical changes have taken place, and to what extent, in the early conditions requiring gastric surgical procedures. As a matter of fact, whether the disease is early or advanced, the patient's general condition and history provide a much better index of his needs than are some of the complex laboratory data. The age, weight, strength and color of the patient, the turgor and quality of the skin, dryness of the mouth and tongue, the color and quality of the mucous membranes, the character of the eyes, the appetite, the history of thirst or loss of it, nausea or vomiting, the presence or absence of edema, the quality and number of stools, the amount and specific gravity of the urine, mental attitude, nervousness, lassitude and paresthesias, give a wealth of information concerning the physiochemical disturbances. From these one should be able to estimate whether there is need for fluids, electrolytes, amino acids and transfusion, and the amounts needed.

True, laboratory tests will be indicated in many cases, especially for patients who are poor risks; but these tests should be evaluated in the light of the patient's history and general condition, as they are at times misleading when taken alone. For example, hypoproteinemia may be more marked than the plasma protein determination indicates, or the patient may be more anemic than one may be led to believe from a high hemoglobin and red blood cell count—all of which may be

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caused by marked dehydration. Therefore, determination of blood proteins and chlorides without correction in the total blood volume are of little value. Plasma protein percentage should be corrected to the ideal hematocrit reading of 45 per cent.[3]

Increase in carbon dioxide combining power may be due to pulmonary emphysema interfering with carbon dioxide elimination instead of alkalosis. On the other hand, the carbon dioxide content of the blood may be low even in the presence of alkalosis, if there has been hyperventilation. Underventilation often is responsible for the reverse condition—acidosis—in the presence of asthma or excessive use of opiates. Blood chloride may be low, but not necessarily because of lack of chlorides, as seriously ill patients frequently maintain a lower level without having lost undue amounts of chlorides, perhaps owing to adrenal insufficiency. It has been suggested that plasma chloride determinations be entirely abandoned because of their unreliability,[2] and that plasma sodium determinations be made instead. In severe dehydration, kidneys are called upon to retain sodium, and therefore the urinary output of sodium also may be misleading. From these few examples alone it becomes evident that preoperative and postoperative administration of fluids, electrolytes and proteins based on chemical tests alone may be very disastrous for the patient instead of beneficial.

Reversible and Irreversible Physiochemical States.—First consideration should be given to the reversible physiochemical states, so that they may be corrected preoperatively and properly maintained during and after operation. These are: dehydration, hypochloremia, secondary anemia, diminished blood volume, infections, vitamin deficiencies, and functional disorders of the heart, liver and kidneys. If not brought under proper control promptly, any of these reversible states can become irreversible.

Irreversible states such as old age, chronic cardiac disease and kidney or lung disease, arteriosclerosis, hypertension and diabetes should be noted and evaluated from the beginning in order to forestall any physical or chemical failures that may occur because of them. Though none of these physiochemical disturbances or pathologic states is likely to occur singly, they are discussed separately for the sake of clarity.

PREOPERATIVE CARE

Reversible Physiochemical States.—1. *Dehydration:* Dehydration is an accompaniment of poor nutrition and loss of weight. In a case of simple water loss the patient is thirsty and his mouth dry. Replacement of water takes care of the situation, and the patient does not need saline therapy. However, in "poor risks" for gastric surgical intervention, the loss of fluid is greater because of anorexia or vomiting. These patients are not able to replenish the obligatory fluid loss which occurs through the kidneys, skin and lungs. Having lost an amount of fluid equal to 6 per cent of body weight, or 4,200 cc. in a man weighing 70 Kg., the patient suffers from very severe symptoms of dehydration,[3, 6] mania (or apathy, if there is also electrolyte loss), disorientation, weakness, low blood pressure, and eventually coma; with a loss of 20 per cent, death ensues, as demonstrated experimentally by Rubner.[3]

The body fluid needs can be easily estimated by the urinary output; 1,000 cc. of urine with a specific gravity of 1.015 to 1.020 is considered a satisfactory output for seriously ill patients. However, attention must be given to its specific gravity, as more water is needed when the specific gravity diminishes. In making a quantitative determination of fluid loss, one should remember that obligatory loss is at least 1,500 cc. in twenty-four hours. To this should be added estimated losses that occur because of excessive perspiration, fever or vomiting. Darrow estimated that about one-third of extracellular electrolyte is lost in marked dehydration, and recommended physiologic solution of sodium chloride equivalent to one-twelfth to one-fifteenth of body weight—or 70 cc. of the solution per kilogram of body weight—to restore the electrolyte balance to a normal level. In a man weighing 70 Kg. this would be equal to 4900 cc. of saline solution. Addition of sodium chloride is necessary, as without sodium water will not stay in the tissues. However, overhydration should be avoided, as this will overload the extracellular compartment and be followed by edema and malfunction of the organs.

Hemoglobin becomes concentrated with dehydration. However, Wangensteen considers the weighing scales 25 to 50 times as dependable as the changes in the hemoglobin level for determining the state of hydration. In his opinion, weighing the patient will assist in detecting overhydration, which may be insidious and very damaging. Fluctuations of 3 per cent of the preoperative normal value require careful scrutiny and attention.

2. *Electrolyte Balance:* In a poor risk patient with a large loss of fluids, correction of the electrolyte balance that becomes the most pressing problem. The symptoms are dehydration and electrolyte loss combined; thirst, however, is absent. Weakness and apathy increase when continuous gastric suction is maintained without any effort to make up the loss parenterally, and it ends in shock. The hematocrit value and the plasma and nonprotein nitrogen concentrations also increase in the blood. Most of the electrolyte loss being in the form of *chloride from the stomach,* there is a drop in blood chlorides. The Carbon dioxide combining power of the blood increases; and alkalosis, with its symptoms of shallow respiration, carpopedal spasm and positive Chvostek's sign follows. To avoid this catastrophe, gastric secretions lost by suction should be measured and replaced volume by volume with physiologic solution of sodium chloride. Though more chlorides than sodium are lost through suction, normally functioning kidneys are able to take care of the extra sodium given in the solution.

To raise the plasma chlorides by 100 mg. per hundred cubic centimeters, 0.5 Gm. of sodium chloride per kilogram of body weight may be needed.[3] As soon as a normal blood chloride level has been established, kidneys begin to excrete 5 to 10 Gm. of salt which had been suppressed up to that time. The amount of sodium chloride needed is variable, depending on fever, amount of perspiration and quality of renal and cardiac function. If alkalosis is not promptly corrected, renal insufficiency develops, since kidneys do not long tolerate excretion of urine with a high *p*H. On the other hand, excessive use of saline solution may lead to edema of the interstitial tissues, resulting in pulmonary and other complications.

Hypochloremia should be suspected in patients with prolonged vomiting and those subjected to gastric suction. Excessive perspiration on the operating table in sultry weather may also produce hypochloremia. An abnormal reduction in electrolytes continued for several days should arouse suspicion of a low blood chloride level. If there is doubt, determination of the blood chloride level should be done. If it is 300 mg. hundred cubic centimeters or less, immediate treatment should be given. If it is around 150 mg., an acute shocklike state must exist, with prodromal symptoms: vomiting of small amounts of bile, abdominal distention, mild abdominal cramps, hiccoughs, gas retention, extreme weakness and oliguria. A daily maintenance dose of 30 to 40 Gm. of salt may be needed in such a case.[4] When the plasma chlorides are low and large quantities of dextrose are given, rapid diuresis takes place, leading to further dehydration.

The replacement of lost gastric fluid[5] should be 33 per cent of the total in the form of dextrose-water and 67 per cent in the form of dextrose-saline. When the salt solution contains also dextrose, it should have only 5 to 6 Gm. of salt per liter (instead of 9 Gm.) for its isotonicity.[6]

In cases of severe alkalosis which may result from continuous gastric suction, 2 per cent ammonium chloride in physiologic solution of sodium chloride may be used to lower the serum carbon dioxide level at the rate of about 1 volume per cent for each gram administered to an average adult.[7] In patients who have acute infections it becomes more difficult to maintain an even electrolyte balance as the sepsis retention of sodium chloride takes place.

Because of the loss of *calcium and potassium,* Ringer's solution, which contains calcium and potassium, may be indicated in place of physiologic saline. Marked restlessness and muscular weakness or twitching should make one suspicious of potassium loss. Ringer's solution, however, will not be sufficient if a serious potassium deficiency exists.[8] Some believe that hypochloremic alkalosis is nothing but a potassium deficiency, since the hypochloremia in these patients often is resistant to sodium chloride.[5] Electrocardiographic tracings may reveal the pattern of hypokalemia.

Hypokalemia also may develop if large infusions of dextrose and especially of sodium chloride are given, as then potassium is washed out with the urine. Severe surgical trauma is another important factor in the production of hypokalemia. However, in treating the condition special care must be exercised, as the limits between normal and fatal blood levels are not very great. One Gm. of potassium chloride per liter may be given after a loss of 6 liters of gastric secretions. Along with it, the patient should receive 1 Gm. of calcium gluconate (10 cc. of 10 per cent solution).[9]

3. *Hypoproteinemia:* Most patients with gastric disease suffer from simple to severe hypoproteinemia. It is very important that the plasma proteins be raised higher than the minimum critical normal level of 5.5 Gm. for plasma and 2.5 mg. for albumin per hundred cubic centimeters of blood and kept there, as with lowering of its level an abnormal retention of fluids and edema occurs in the interstitial tissues.[6] Deficiency of 1 Gm. in blood albumin means a loss of 30 Gm. of body proteins.[10] The most outstanding symptoms are weight loss, cutaneous laxity, subcutaneous edema, impaired pulmonary, gastrointestinal and renal functions, impaired wound healing and decreased resistance to infection and trauma. Untreated, it ends in shock. Hematocrit and protein determinations, with emphasis on albumin, are essential to determine the degree of hypoproteinemia. When there is a loss of 1 Gm. of plasma albumin, it means that there has been a loss of 30 Gm. of body proteins.

In simple or moderate hypoproteinemia, a high caloric diet for several days will suffice. Varco has worked out a number of suitable diets for the purpose.[11] In severe hypoproteinemia, protein concentrates may have to be added to the diet to supply additional proteins. In some patients, even in the absence of pyloric obstruction, amino acids or casein hydrolysates may have to be administered parenterally, as they are usually unable to metabolize food properly. It has been estimated that to play safe one should not administer more than 3 liters of 5 per cent hydrolysate, which is equal to about 0.3 Gm. of nitrogen per kilogram of body weight in a man weighing 70 Kg. This amount of protein is not sufficient to replace the increased protein loss due to disease or tissue trauma, especially since the infused protein is burned as a source of energy and lost for the tissue synthesis, if the caloric requirements are not met.[12] Therefore, additional calories must be added to the amino acids. It has been estimated that to meet the basal protein requirements one should administer 25 calories per kilogram of body weight per day to an adult, which in parenteral fluids is equivalent to 3 liters of 5 per cent protolysate in 10 per cent dextrose solution in a patient weighing 70 Kg.[13] However, some patients need more calories in order to correct the protein deficiency.[14] To assure restitution of proteins and weight gain in the same patient, it will require 30 to 40 calories per kilogram of body weight, or 3 liters of 15 per cent dextrose in 5 per cent hydrolysate per day[1] The rate of the infusion should be 0 5 Gm of dextrose per kilogram per hour to avoid glycosuria and diuresis,[16] and prevent local venous thrombosis On this basis it will take about an hour and a half for a 5 per cent dextrose solution or about three hours for a 10 per cent dextrose solution in a patient weighing 70 Kg When a hydrolysate is added to the dextrose solution, there is less glycosuria than when dextrose is given alone, as is shown by a lower blood sugar level[16] When alimentary feeding is impossible and a large number of calories is needed, absolute alcohol may be added to the 5 per cent amigen to make up a 6 per cent alcohol solution[17] Fat emulsion for parenteral use is still in an experimental state, but it is promising

Since proteins and food in general are best utilized by the body when given by mouth,[18] it is best to resume oral feeding as soon as tolerated and never parenterally, if the patient can handle a high caloric diet containing large amounts of proteins, carbohydrates and a fair amount of fat and vitamins It is extravagant to use the intravenous route when some other route of feeding—oral, orogastric or jejunal—is available, as parenterally one has to supply twice the body requirements[19] When food is given by mouth, the nitrogen balance can be maintained by 0 3 Gm of nitrogen and 30 calories per kilogram of body weight per day, but when it is administered parenterally, double or triple that amount is needed[20]

Even with a high protein hospital diet, the nitrogen intake is approximately 20 8 Gm daily,[20] the equivalent of 125 Gm of proteins for a man weighing 70 Kg, which is not sufficient to replace the increased protein loss due to trauma or disease There is increased loss of nitrogen even in patients with good nutritional balance, indicating that operative trauma may play a role in increasing nitrogen loss in a well-nourished patient When patients are unable to take foods by mouth, nitrogens, such as amigen or other hydrolysates, can be given intravenously up to 0 3 Gm nitrogen per kilogram of body weight[20] However, if an additional amount of 0 8 Gm of nitrogen per kilogram of body weight could be given by mouth, it would make a total of 1 1 Gm of nitrogen per kilogram, or 500 per cent greater than the intake possible with natural foods The use of intravenous amigen when the patient is unable to take food by mouth shortens convalescence and assists in wound healing

External or subcutaneous edema may be only a late symptom of hypoproteinemia which has been going on for some time in vital organs In the most severe form of hypoproteinemia, which develops insidiously over a long period of weeks because of insufficient protein intake or synthesis in diet, there is a state of chronic shock[21] In these cases, in addition to retention of fluids in the interstitial tissues and a large loss of weight, there is also a great decrease in blood volume,[1] making it necessary to give preoperative transfusions The amount will depend on the case—varying from 1,000 to 2,700 cc of the whole blood per day[22] There is little danger in overloading the vascular tree in the absence of cardiac disturbances

The need of blood transfusion is apparent in many patients with acute shock because of repeated hemorrhages from the stomach or duodenum They show evidences of marked secondary anemia, with hemoglobin levels as low as 20 per cent The entire hemoglobin deficit should be corrected by whole blood, with 16 3 Gm as the desirable standard Blood increases oxygenation, prevents damage to liver and brain, and aids wound healing The administration of large amounts of saline solutions to patients who have had excessive hemorrhage is dangerous and

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When deficiency of both hemoglobin and tissue proteins coexists, priority is given to the synthesis of hemoglobin.[23] And, since it takes some time to regenerate his own red blood cells and hemoglobin, the patient's tissues do not obtain enough proteins to aid in wound healing. Because of this, Coller has advised restoration of the hemoglobin level before forcing the proteins. Since the hemoglobin value and the red blood cell count do not serve as an accurate index of the extent of the patient's anemia when hemoconcentration exists, one should resort to hematocrit, plasma and whole blood specific gravity determinations.[20] Blood replacement, volume for volume, should be continued until pulse and blood pressure are stabilized.

4. *Infections:* All infections should be brought under control, e.g., to prevent pulmonary and other complications. Hygiene of the mouth and gums should receive attention. In the presence of an acute infection, elective surgical procedures should be postponed.

5. *Dysfunction:* The disturbed gastrointestinal tract should be put in better order. Food in the form of protein and dextrose should be administered parenterally. When there is nausea or vomiting, suction should be used to decompress the stomach. The amount lost by suction should be noted and replaced parenterally.

Suction often reduces edema of the stomach and duodenum as well as gas collected in the small intestines. The reduction of edema cuts down operative technical difficulties and promotes better postoperative healing. The tube is shut off for an hour or two when liquids are given by mouth and the patient made ambulatory during this period. The amount of gastric residue is determined at bedtime; if it is excessive, oral feeding is discontinued. The tube may be removed at bedtime to guard against possible pulmonary infection caused by irritation. This will also insure better sleep.

Lavage of the stomach prior to operation is essential. This is done on the last preoperative day as well as on the morning of the operation. The tube is left in the stomach as the patient goes to the operating room, so that the latter may be emptied of its secretions on the operating table. In the presence of achlorhydria, lavage with hydrochloric acid may be of some value in its bacteriostatic effect.

6. *Psychosomatic Aspects:* The psyche of the patient should receive proper attention. He is emotionally upset, anxious, and often fearful of death. Any emotional upheaval disturbs the secretions and the motility of the gastrointestinal tract. Vagotomy and sedation are advocated for ulcer patients on the basis of this knowledge; then why not make use of the same knowledge in preparing these patients for operation? Beforehand the patient should be told of the common use of oxygen and transfusions and the advantages of early ambulation. If he is given a genuine idea of their value, he is not so likely to be upset when these measures are used. The hopeful side of the case should be emphasized to allay his fears further. While waiting for surgical treatment he should receive sedation. Preoperatively he should be assured of a good sleep, and amnesia-producing medication should be given before he leaves his bed for the operation. Morphine with scopolamine is an excellent premedicament in proper doses.

7. *Vitamin Deficiency:* Patients with gastric disease, because of insufficient diet or vomiting, are not only unable to obtain Vitamins B and C in any form, but they are actually losing even the meager amounts ordinarily stored in the body. The lack of Vitamin B may lead to poor functioning of the enterostomy stoma, and the lack of Vitamin C may delay its healing. In addition, Vitamin C aids in the proper distribution of fluids in the tissues and prevents pulmonary complications. If unable to take them by mouth the patient should be given them parenterally, 1 to 3 cc. of vitamin B complex and 500 or mg. of vitamin C. Vitamin K

may be necessary for patients with hypoprothrombinemia.

Irreversible Pathologic States.—A thorough physical examination will reveal any chronic pathologic states that may play an important part in the outcome of surgical treatment. These states should be appraised in the same way as the physical fitness of an athlete before he is entered in a severe physical contest. A patient with gastric disease about to undergo a major operation is not physically in the best condition; on the contrary, he is handicapped by disease and is subjected to a contest more severe than the athlete undertakes. An athlete is kept out of a contest if unfit, but a patient with a gastric lesion has to submit to treatment. He must be prepared for the struggle, and in the right way. The surgeon must be alert to all defects and deficiencies of his patient and prepared to meet all emergencies that may arise because of them.

Age: Among the irreversible pathologic states the most important is age. This is especially significant today, because more and more elderly patients must undergo gastric operations. The mortality rate rises sharply after the 50-year mark, because of disturbed physiologic states due to age alone. Elderly patients suffer from arteriosclerosis, which affects all vital functions of the body. Their chemical processes are slow, their ability for "comeback" very limited and their margin of safety very narrow. Their reactions and responses to anesthetic agents or trauma are poor. They require special care both before and after operation.

Cardiac Handicaps: If myocardial decompensation is present, it should be corrected. If coronary insufficiency is present and the cardiac reserve limited, the patient should be protected against anoxia, both during the operation and afterward, by the use of oxygen. Dextrose is a good cardiac stimulant and food for the myocardium. The volume and speed of administration of parenteral fluids should be graded according to the patient's cardiac status, since overloading the circulation may lead to cardiac failure. In some cases saline solutions may do more harm than good.

If there is impending decompensation, full digitalization may be necessary. Patients with a history of cardiac disease should have the attention of a cardiologist throughout the treatment. The electrocardiogram is of value preoperatively, especially for poor risks, as an unsuspected myocardial infarct from a previous attack may be detected. Recently some have stressed the value of electrocardiograms taken during the operative procedure so that any cardiac change, especially arrythmia, may be detected and the emergency instantly met. Every adult patient with diabetes, hypertension or myxedema should be suspected of having coronary sclerosis.

Cardiac arrythmia is not of great significance unless there is associated tachycardia or unless it is the result of myocarditis, infarction or a state of shock. Most of these can be controlled with quinidine.

Other Chronic States: Chronic kidney diseases, hypertension, syphilis, hyperthyroidism, bronchiectasis, cirrhosis of the liver, emphysema and diabetes, if present, require preoperative attention for a successful outcome. Loading of fluids in a renal case may cause edema and overhydration. Chronic emphysema predisposes to infection and pulmonary complications. Lack of oxygen in such cases causes anoxia and leads to cardiac complications. The hyperthyroid patient has to be prepared by iodine or thiouracil. The bronchiectatic patient will require constant suction of his pulmonary tree. In a hypertensive patient, a sudden drop of blood pressure may be disastrous. In a diabetic patient the dehydration is greater, as more water is being lost; this places additional demands for water, sodium, potassium. Without proper correction, acidosis develops with lower carbon dioxide values. In patients with poor hepatic function a careful watch must be kept over the changed hematologic values. This should never be neglected; it is extremely important.

POSTOPERATIVE CARE

Postoperative care should be comparatively simple and easy if all physiochemical disturbances have been adjusted before and maintained at a normal level during the operation. Postoperatively, all that has to be done is to continue the maintenance of normal balance already attained and forestall complications that may possibly develop. If the patient has been properly evaluated preoperatively, the surgeon will know what to expect and will take appropriate measures to prevent these complications.

Though this is not the place to discuss the conduct of anesthesia or the surgical technic, their important relation to preoperative and postoperative care cannot be overemphasized. Maintenance of an even pulse rate and blood pressure, proper pulmonary ventilation, tracheal suction and a properly chosen and lightly maintained anesthesia will undoubtedly prevent pulmonary edema, atelectasis, pneumonia and postoperative shock. Technically and physiologically correct surgical management, gentle handling of tissues, proper hemostasis, judicious use of clamps, avoidance of leaving dead tissue behind, and care to prevent damage to the blood supply of the viscera will forestall some of the common complications that follow gastric operations—leakage at points of anastomosis, shock, peritonitis, intestinal obstruction, and some of the more severe postgastrectomy syndromes.

In any gastrectomy there is a total loss of 500 to 700 cc. of blood, depending upon the surgeon. This depletes the patient not only of proteins but of many other valuable nutrients; and the blood loss should be replaced during the operation.

Regardless of the quality of preoperative and postoperative care, however, if the technic of the operating surgeon is not also based on the knowledge and appreciation of physiochemical science, the patient will suffer. To overlook this aspect of the matter is to invite complications and failure.

PREVENTION OF COMPLICATIONS

1. *Atelectasis.*—Immediately after the operation, deep breathing must be started. If the patient is not sufficiently awake to do his own deep breathing, carbogen should be used every few minutes. The patient should be made to cough, and if he is having difficulty in raising sputum his chest should be pounded with a fist from behind. If there is any suspicion of atelectasis because of plugging of the bronchial passageways, bronchoscopic suction should be used. A roentgenogram is of great value at this time to rule out the beginning of pneumonia or atelectasis.

2. *Thrombosis, Embolism and Abdominal Distention.*—The patient should be made to exercise his feet, legs and arms, and to sit up and turn in bed. In a day or so he should be made ambulatory if possible. No pillows should be used under his legs, nor is he to be allowed to sit up in chairs which press against the calf or the popliteal space. With early ambulation, less sedation is required and there is less abdominal distention. Because of the latter, there is less likelihood of gas pains and wound disruption. Infections of the respiratory tract are also reduced in number. Dicumarol may be necessary for patients with cardiac disease or varicose veins, especially those who have had a thromboembolic disease before are more susceptible to embolism. Prophylactic femoral ligation is rarely needed.

3. *Interstitial Edema and Shock.*—A careful watch should be kept to avoid dehydration, nor should the patients be overhydrated. Interstitial edema of the lungs, the brain, the liver, the heart or the anastomosis will be prevented by continuance of proper use of hydration, electrolytes and proteins. Since the ability of the kidneys to secrete sodium is temporarily diminished after surgical intervention, not more than 500 cc. of saline solution, if any, should be administered during the first two postoperative days. There after the amount needed will depend on the total urinary output and the

amount of sodium chloride contained in the urine. When there is need of proteins and saline solution is administered instead, it may end disastrously by producing sudden interstitial edema in vital areas.

Since the twenty-four-hour obligatory water loss is 1,500 cc. and another liter is lost by perspiration on the operating table, about 3 liters of dextrose solution will be needed to replace the loss and supply other needs. Since some protein is transported to the injured tissues, the need of proteins increases postoperatively. If plasma proteins are not maintained at a normal level, edema will take place in vital areas, including the site of anastomosis. Low serum proteins thus may nullify all efforts of surgery by causing intestinal obstruction in the stoma and damage in other organs.[24] Proteins, by going to the operatively injured parts in large quantities, promote wound healing and thus prevent wound disruption. However, if fluids are forced when it is proteins that are needed, generalized marked edema may develop.

When there is a combined loss of fluids, electrolytes and proteins (and/or blood), there is also a loss in the blood volume which must be reestablished by blood transfusion. Blood assists in wound healing by increased oxygenation and prevents damage to the liver, brain, heart and lungs.

4. *Infection.*—Too much reliance should not be placed on antibiotics to prevent infection, lest one forget that the first line of defense is the proper preparation and care of the patient in many other ways—gentleness in handling the tissues, hemostasis, sutures and proper surgical technic. The indwelling tube should be removed as early as possible to reduce the number of factors favoring pulmonary infections. Considering the patient's age, debility, and other factors, it may be desirable to use certain antibiotics both before and after operation. If symptoms of atelectasis are developing, in addition to the measures for the relief of the air passageways, antibiotics may be useful to prevent pneumonia. Streptomycin with penicillin should be administered if pneumonia is suspected.

Leakage from the anastomosis may produce localized abscess in the lesser sac or at the subphrenic area. With the very first symptoms, antibiotics should be used before an actual abscess has developed, in the hope that drainage will not become necessary. Fistulas of the duodenal stump usually develop a week after operation, requiring constant drainage by suction, with the use of a small motor. Aluminum paste around the fistulous opening alleviates the discomfort to a certain degree and prevents further excoriation of the skin.

5. *Disturbances Due to Postoperative feeding.*—There is considerable difference of opinion as to how and when patients with gastric disease should be fed postoperatively. Some institute a liquid diet early. The feedings are very small and frequent. The amount is gradually increased and the number of feedings reduced. While the intake is limited, the patient receives additional fluids and nutrients by vein. Some do not give anything by mouth until the third day. Constant suction is maintained for two or three days only. On the third or fourth day the tube is clamped off. If the amount of retained gastric secretions at the end of four hours is not more than 120 cc. the tube is removed. As the fluids and semi-soft foods by mouth are increased, the amount of parenteral feeding is reduced.

Some vigorously advocate the use of a double-lumen tube, which is placed in the efferent loop of the jejunum at surgery. I have had no personal experience with it. The advocates of jejunal feeding argue that food is best utilized from the jejunum; that the entire daily requirement can be given without resorting to parenteral alimentation; that less is required than for parenteral feeding, and that food in the jejunum stimulates and keeps up normal peristalsis, thus reducing gaseous distention and pain. When an Abbott-Rawson double tube is used, gastric decompression is maintained by suction, the patient being fed by slow drip into the lumen of the jejunum several inches below the anastomosis. The mixture contains all necessary nutrients and vitamins.[18] The double-lumen tube sometimes is placed through a gastrectomy opening, thus relieving the patient of the discomforts and the surgeon of the fear of pulmonary infection. Whether the single-lumen or the double-lumen tube is used, oral feeding of liquids is started on the fifth day and gradually modified to a soft bland diet.

There will be less need of postoperative gastric suction and jejunal tube feeding if the patient is carefully prepared preoperatively with regard to his electrolyte and protein needs and gastrointestinal decompression long enough to reduce edema of the stomach and duodenal wall. With less edema in these structures there will be fewer technical difficulties and less fear of leakage.

6. *Postgastrectomy Syndrome:* Nearly one-third of gastrectomized patients have an early or late dumping syndrome. The syndrome varies in degree, time of onset and symptoms. The early syndrome begins about two weeks after the operation. After a meal the patient feels weakness and warmth followed by cold diaphoresis, especially about the forehead, palpitation, and a sensation of gas or gurgling in the abdomen. The attack comes on quickly and leaves very shortly. The patient is relieved by a supine position. Occasionally the syndrome is accompanied by discomfort in the upper part of the abdomen, regurgitation or vomiting, and a few have frequent bowel movements or diarrhea. Some fail to gain weight. All sorts of explanations have been advanced as to the cause. Among these are hypoglycemia, reflex vagotonia secondary to jejunal distention and faulty stoma. Rhodes caused improvement in the dumping syndrome by reducing the stoma by 5 per cent. The therapy of the syndrome is frequent, small feedings, lying down soon after eating, avoiding large amounts of liquid and ingestion of drier foods.

7. *Anemias:* Hydrochloric acid may be useful to patients with total gastrectomy. Liver extract should be administered to patients in whom postoperative anemia develops.

8. *Ulcer:* Patients who have had duodenal ulcers should be given an ulcer regimen and diet.

SUMMARY AND CONCLUSIONS

Modern gastric surgery places greater emphasis on the physiochemical disturbances caused by gastrointestinal disease, anesthetics and surgical trauma, which have to be corrected and maintained both preoperatively and postoperatively as well as during the operation. To do this requires knowledge of physiochemistry. However, the surgeon should not depend entirely on the laboratory reports. He should evaluate them in the light of the patient's history and physical examination in order to avoid serious mistakes.

Setting up routine orders for a case of surgical disease of the stomach may lead to many unnecessary or even dangerous procedures. Therefore, each individual patient's exact needs have to be determined and treated accordingly. The principles and methods whereby the surgeon can measure these needs are discussed, and types of preoperative and postoperative care suggested.

RÉSUMÉ ET CONCLUSIONS

La chirurgie contemporaine apprécie considérablement les manifestations physio-chimiques anormales, suites de maladies gastrointestinales, des anesthésiques, du traumatisme chirurgical que l'on doit connaitre pour corriger aussi bien avant et après l'intervention que pendant. Ceci demande des connaissances de chimie physiologique, cependant le chirurgien ne doit pas uniquement se fier au laboratoire. Il doit en plus estimer l'histoire clinique du patient et son état

physique pour s'éviter de commettre de graves erreurs.

Etablir d'emblée une routine peut conduire à des manoeuvres inutiles voire même dangereuses. Les besoins individuels de chaque patient doivent donc être bien déterminés et traités conséquemment. Ces principes et procédés que tout chirurgien doit considérer sont ensuite discutés, de même que leur données pré et postopératoires.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

Die moderne Magenchirurgie legt erhoehten Wert auf die Beobachtung der physiochemischen Stoerungen, die durch *Magendarmerkrankungen, durch Narkose* und durch Operationstrauma entstehen, und die vor, waehrend und nach dem chirurgischen Eingriff korrigiert und reguliert werden muessen; dazu gehoeren zwar Kenntnisse in physiologischer Chemie, doche sollte der Chirurg sich nicht ausschliesslich von Laboratoriumsberichten leiten lassen, sondern vielmehr, um schwere Fehler zu vermeiden, diese Befunde im Lichte der Krankheitsgeschichte und der Untersuchung am Krankenbett auswerten.

Das Aufstellen eines Schemas von Verordnungen fuer Kranke mit chirurgischen Magenleiden kann zu manchem ueberfluessigen und sogar gefaehrlichen Vorgehen fuehren. Was der einzelne Kranke braucht, muss nach individuellen Gegebenheiten genau bestimmt und bei der Durchfuehrung der Behandlung beruecksichtigt werden. Nach welchen Prinzipien und Methoden der Chirurg solche individuellen Beduerfnisse ermitteln kann, wird eroertert und Formen prae- und postoperativer Behandlung werden in Vorschlag gebracht.

RESUMEN Y CONCLUSIONES

La cirugía gástrica moderna dedica mayor atención a los trastornos fisicoquímicos por enfermedad gastrointestinal, anestésicos y trauma quirúrgico, los que deben corregirse y mantenerse tanto pre y postoperatoriamente como peroperatoriamente. Esto requiere conocimiento fisicoquímico, pero el cirujano no debe *depender enteramente de los informes del* laboratorio. Debe evaluarlos de conformidad con los antecedentes y el examen físico del paciento si quiere evitarse serios errores.

La conducta rutinaria en casos de enfermedad gástrica quirúrgica pueden conducir a muchos procedimientos innecesarios y aun peligrosos. En consecuencia, deben determinarse las necesidades individuales exactas del paciente conforme a sus requerimientos. Se discuten los principios y métodos que permiten al cirujano estimar estas necesidades, sugiriéndose asimismo los tipos de atención pre *y postoperatoria.*

RIASSUNTO E CONCLUSIONI

Chirurgia gastrica moderna pone piu grande enfasi su i turbamenti fisiochimici causato da malattia gastro-intestinale, anestetici e trauma chirurgico, che devon' essere corretti e mantenuti entr-ambi preoperatorio e postoperatorio benche' durante l'operazione. A compire cio' richiede conoscenza di fisiochimica; il chirurgo intanto, non dovrebbe fidarsi interamente delle relazioni laboratorie. Dovrebbe valutarle nella luce del'anamnesi ed esamina fisica se evitasse abagli gravi.

Fissando ordini pratici per casi di malattia chirurgica gastrica puo' condurre a molti procedimenti inutile ed ugualmente pericoloso. Bisogna determinare le necessita' esatte del paziente individuale e trattarle secondo loro esigenze. Discute i principii e metodi tra quali il chirurgo puo' misurare questi bisogni, e suggerisce i tipi di cura pre e post-operatoria.

SUMÁRIO E CONCLUSÕES

No terreno da moderna cirurgia gástrica o estudo das perturbações fisioquímicas causadas pela enfermidade gastroduodenal, pelos anestésicos e pelo traumatismo cirúrgico assume crescente importancia devido ao interesse em corrigil-as seja no pré ou no pós-operatório ou

durante a operação. Isso requer conhecimentos de fisioquimica; o cirurgião não deve se basear inteiramente nos resultados do laboratório. Ele deve avaliar essas perturbações á luz da história e do exame físico do paciente si deseja evitar erros graves.

O estabelecimento de exames de rotina para casos de doenças gástricas cirúrgicas póde conduzir á métodos desnecessarios ou, mesmo, perigosos. As necessidades exatas de cada paciente devem ser, portanto, determinadas e propriamente tratadas.

Os princípios e métodos com os quais o cirurgião póde aquilator estas necessidades são discutidos, e tipos de cuidados pré e pos-operatórios são sugeridos pelo autor.

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Treatment of Trichomonas Vaginalis Vaginitis

II. Factors Affecting Response To Treatment

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A LITTLE over seven years ago an investigation was begun in the outpatient gynecologic clinic at Cook County Hospital, Chicago, which had for its objective a method of treatment of vaginal trichomoniasis more effective than previous treatment and more dependable in the prevention of recurrence.

At an early stage it became apparent that more was involved than the development of an effective therapeutic agent. A *procedure* of treatment had to be worked out, taking into account the habits and limitations of the patient, the recognizable and preventable sources of reinfection, and the factors contributing to resistance to treatment and recurrence of the condition.

A procedure was developed in 1945 and was subjected to a test previously reported,[1] which proved to be successful in 98 or more of every hundred cases of Trichomonas vaginalis vaginitis carried to completion at this clinic.

From the point of view of research, this degree of closeness of approach to 100 per cent effectiveness has had the disadvantage of a very small number of failures accruing to provide answers as to why treatment is not always successful and how it can be further improved. It has taken us five years, and the examination and study of many hundreds of patients, to complete the study of the failures which form the nucleus of this report.

The history, clinical data and course of treatment for these failures are here examined against the background history, etc., of the cases in which there appeared to be no resistance to treatment, and the intermediate cases in which there was some resistance, requiring some prolongation of treatment to achieve a successful end result.

Methods.—The treatment procedure remained continuously as earlier described[1] except for the reduction in dosage described in Table 1. It consisted of search for and elimination of foci and sources of reinfection, together with use of argypulvis (finely powdered argyrol, kaolin and lactose) by insufflation at the time of examination, and as a capsule inserted nightly in the vagina after a preliminary douche with 4 tablespoonfuls of white vinegar in 2 quarts of warm water.

The principal physical sources of reinfection looked for, and appropriately treated or corrected if possible when found, were the cervix, the endocervix, Skene's ducts, Bartholin's glands, the bladder and urethra, and the rectum. The patient's toilet hygiene, bathing hygiene and marriage partner were also responsible in some instances.

The patient was asked to return for reexamination one week from the day of beginning treatment. No capsule was inserted on the night before reexamination. Only the douche was taken. After the reexamination a second insufflation was

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TABLE 1—*Equivalence of Response to 2 and 4 Gm Dosages*

	4 Gm series	2 Gm series
Number of cases	158	194
2 or more "recurrences" before completion of treatment, %	5 1	4 6
Failures, %	1 9	1 0

given and the patient again instructed to return at week's end, insert the capsules nightly, etc, for such additional time as appeared to be individually indicated No more than three weeks of treatment was given except when an extension of treatment appeared to be required on the basis of an incompletely established result

The patients were urged not to interrupt treatment during the menstrual period Treatment usually was frequently interrupted, and at times for long periods, because of incomplete cooperation on the part of the patient Authorized interruption for eight weeks was permitted at the first indication that a complete result had been obtained, and treatment was discontinued when examination at the end of an interruption lasting eight weeks or more showed no return of trichomonads or symptoms

The average time lapse between presentation for treatment and closing of the case as "complete" was twenty-two weeks for patients in the completed cases free of the complication of recurrence, and forty-five weeks for the remainder

Individual records were kept, detailing, as far as was pertinent and practicable, the patient's age, color, marital status, and history, the observations at the time of examination, the treatment given, and the course of recovery

Difficulty is encountered, in studies made under clinical conditions, in securing the return of the patient for reexamination, continuation of treatment, and confirmation of observation on a set schedule A large percentage of patients fail to come back at all, presumably because one week of treatment is, in many cases, all that is required for elimination of trichomonads and relief of symptoms, and many patients feel no motivation toward return unless there is need for immediate help Fewer than one third of treated patients return for a full schedule of treatment, and only a part of these continue to return for checkup

We obtained a total of 352 records which appeared to be sufficiently comprehensive for the comparisons to be reported

For the evaluation of these records it was recognized that no statistically cogent comparisons were possible, because of the variation of the material, the variation in faithfulness of adherence to direction, the number of observers involved, the overall limitations of clinical procedure, the complexity of the problem, and the smallness of the total group in which an unsuccessful result was recorded With only 5 proved failures over a five-year period, all that could be attempted was a sifting of factors that appeared to have no influence on the result from factors that clearly had a direct effect

It also was recognized that, although a positive observation of trichomonads in the vagina is conclusive, in the absence of contamination by the investigator at the time of testing, a negative test result can be considered conclusive only to the extent supported by the later observations and the clinical course

Johnson and his associates[3] have shown that fluctuations in the vaginal trichomonad population occur in untreated, experimentally infected monkeys, with peaks three to five days before or after the menstrual flow Williams[4] has been able to demonstrate, through a culture technic, that trichomonads may persist in the vaginas of such monkeys even when they escape microscopic detection Hartman has found a culture technic considerably more dependable than the hanging drop technic as a method of establishing the absence of trichomonads (One out of every 5 negative results obtained by the hanging drop test proved to be positive by the culture technic) The hanging drop technic remains, of course, the one most practical for routine check

Seventeen of the 352 records showed instances of repeated "recurrence" during the course of treatment, which probably were, at least in some part, flare-ups, during the menstrual period, of an infection still not completely eradicated. Conclusions as to control of the infection are drawn only on the basis of continued negative microscopic observations during the treatment period and over the test interruption period of eight weeks or longer, together with a clinical result warranting such interruption.

Results.—Dosage: As may be noted in Table 1, some of the patients had been given capsules containing 4 Gm. of argypulvis for nightly insertion, and the remainder had been given capsules containing 2 Gm. The 2-Gm. series was carried through after the 4-Gm. series and benefited to some extent from increased experience.

The number of failures at the 4-Gm. level was 3 of 158, or 1.9 per cent; and at the 2-Gm. level, 2 of 194, or 1 per cent. Clearly the 2-Gm. dose was as effective as the 4-Gm. dose and no need exists for insertion of more than one 2-Gm. capsule nightly. Insertion of more than one capsule reduces the amount of moisture available per capsule to an extent interfering with effective disintegration and dispersion. The preliminary douche, before insertion of the capsule, helps to make certain that adequate moisture will be available.

TABLE 2.—*Absence of Treatment Failures with Patients Aged* 40 *or Above*

Age	Number of Cases	% Given Treatment for More than 3 weeks	6 weeks	12 weeks	% of failures
15-19	14	21	7	0	0
20-24	53	42	6	0	0
25-29	66	47	9	4.4	1.5
30-34	68	53	16	7.4	3.0
35-39	42	57	17	2.4	2.4
40-44	44	45	14	0	0
45-49	30	47	17	0	0
50-67	19	58	5	0	0
No age given	18	61	11	5.6	5.6

Occasional complaints were received that the capsules did not "dissolve". This lends emphasis to the need for strict adherence to instruction, including the preliminary douche, particularly when dryness is present.

Age and Color: The percentages of Negro and white patients were 83 and 17 respectively. The age distribution is recorded in Table 2.

Approximately one-half of the patients were in the age group between 25 and 39. All those in whose cases the treatment failed were in this group. No failures were observed in patients under 25 or over 39, nor were there any in this group who required unusually prolonged treatment.

Hysterectomy: The patients with records of hysterectomy prior to beginning of treatment showed a higher proportionate incidence of resistance to treatment, and failure, than did any other group in this series. In every instance of resistance to treatment and of failure, these results were associated with supracervical hysterectomy, the age of the patient being 25 to 39 and the hysterectomy having been performed as recently as four to twelve weeks prior to the beginning of treatment. So great was the contributing influence of this single factor that the percentile failure for the group with hysterectomy within twelve weeks of beginning treatment, and of an age less than 40, reached the very high figure of 30.

In contrast, only 0.4 per cent of the group with no record of recent hysterectomy and of an age less than 40 were failures.

The influence of hysterectomy on the outcome may have been in some way due to creation of a resistant trichomonad focus in the persisting cervical stump in the instances of failure.

We are now gathering cases of recent supracervical hysterectomy for swab applicator culture of the residual endocervix. Hartman[5] has observed that trichomonads sometimes can be found in this location with his culture technic, even when not demonstrable in the vagina. When positive results are obtained for trichomonads, the cautery will be employed to reduce and perhaps remove the focus of this possible source of resistant infection, before routine argypulvis insufflation is begun.

The *initial vaginal pH* determined with nitrazine paper as described in an earlier report[1] was not recorded for every patient. Of the total of 305 with such records, 147 had a *p*H, adjacent to the cervix, below 6, for 158 the *p*H was between 6 and 7.5. All of the failures occurred in the group with an initial *p*H below 6 (see Table 4).

Certainly, mild acidity is not in itself capable of eradicating trichomonas infection, and the theory that simple correction of the vaginal *p*H to normal, in instances of trichomonas infection, may be relied upon to eliminate the infection is not in harmony with the facts. The vaginal *p*H was within the normal range in some of our most resistant trichomonad infections.

Presence of discharge. In the absence of recent hysterectomy, this did not appear to be associated with any materially higher incidence either of resistance to treatment or of failure than was observed for the series as a whole (Table 5).

The incidence of failures among women who had never been pregnant and who had no record of recent hysterectomy was zero, as compared with the 1 per cent incidence of failure for those who had been pregnant once or oftener. No treatment failures were observed in the *nonsurgical* cases in association with *endocervicitis, cervicitis, erosion, nabothian cyst, ovarian cyst,* or *uterine fibroids*. However, a heightened percentage of cases in which 2 or more recurrences took place before completion of treatment was observed in the group with endocervicitis, which confirmed the clinical impression that the presence of endocervicitis makes eradication of a superimposed vaginal trichomonad infection more difficult.[6]

TABLE 3.—*Recent[*] Hysterectomy as a Factor Interfering with Effectiveness of Treatment in Patients Aged Less than 40*

Age at Time of Hysterectomy	Number of Cases	% Given Treatment for More than 3 weeks	6 weeks	12 weeks	% of Failures
Less than 40	10	80	60	50	30
40-67	12	75	33	0	0
Cases with no record of recent hysterectomy					
Less than 40	233	41	9	2	0.4

Within 4 to 13 weeks of the beginning of treatment. Three additional patients aged 30-39, with hysterectomy 2-6 years before beginning treatment, had an average length of treatment 3.7 weeks with no failures, 8 additional cases of age 40-67, with hysterectomy 6 months to 7 years before, had an average length of treatment of 4.5 weeks, with no failures.

TABLE 4.—*Presence of a Vaginal pH below 6, at Time of Beginning Treatment, in All Instances of Failure*

	pH at Beginning Treatment	No. of Cases	% of Failures
No record of recent hysterectomy	Below 6	136	1.5
	6-7.5	150	0
Record of recent hysterectomy	Below 6	11	27.3
	6-7.5	8	0

Reinfection. In some of the instances of recurrence, gaps of as long as seventeen to forty-two weeks were observed over which the patient remained trichomonas-negative and yet came back with a return of the infection. In these instances, the suggestion, of reinfection from without was difficult of confirmation. No provision was available in the clinic for concomitant examination of the marriage partner, and in 2 instances, when some other arrangement was made for examination of the partner, the patient herself failed to return for further treatment and study. There can be no doubt that the marriage partner is one of the background factors accounting for this type of recurrence, since we have encountered in our private practice several instances of trichomonads in the male, e.g., in the prostatic secretion, the urine, or the seminal fluid.

amination she had had a left tubal ovarian abscess and had undergone exploratory laparotomy. The vaginal pH at the beginning of treatment (Sept. 11, 1946) was 4.5. The first reexamination revealed no trichomonads, nor were any present after the next mentrual period. Her husband died on November 13. A positive result was obtained from a test for trichonomads on December 4. The patient did not return to the clinic until Aug. 20, 1947. She came again on Nov. 11, 1948. On both occasions the results of the test were positive. Treatment was resumed and negative results were once more obtained, but recurrences took place on March 3, April 21 and July 21.

CASE 5.—A patient of undetermined age, twice pregnant and the mother of 2 children, had undergone a gynecologic operation of undetermined date and extent. There was induration of the right and left adnexae. The vaginal pH at the beginning of treatment was 4.5. The first reexamination revealed no trichomonads. The results of all tests remained negative from June 1 through August 10 (ten weeks) without treatment, but were again positive on October 26. Further recurrences took place on Jan. 25, March 1, May 11 and July 26, 1950. On May 11 the following note was made: "Patient very drunk and does not follow instructions well."

SUMMARY

The history, clinical data, course of treatment and outcome are compared in a series of 352 cases of Trichomonas vaginalis vaginitis. The high percentage of successful results with the argypulvis procedure is confirmed. Three and probably 4 of the total of 5 treatment failures were associated with a history of recent supracervical hysterectomy. All of the failures occurred in patients aged from 25 to 39, with a vaginal pH below 6 at beginning of treatment. Recommendations are given with a view to increasing the expectancy of satisfactory results.

RÉSUMÉ

L'auteur rapporte l'histoire clinique, les constatations morbides, l'évolution clinique et le traitement d'une série de 352 cas de vaginite à trichomonas. Le traitement par la poudre d'argyrol en pulvérisation est le traitement recommandé à cause des excellents résultats. Les trois ou quatre cas d'échecs sont survenus chez des malades qui avaient subi une hystérectomie sub-totale. On note aussi comme cause d'échec, l'âge- entre 25 et 39 ans- , un PH vaginal à 6. On recommande cependant d'attendre davantage avant de se prononcer sur le traitement.

ZUSAMMENFASSUNG

352 Faelle von durch Trichomonas vaginalis hervorgerufener Scheidenentzuendung werden bezueglich der Krankengeschichte, des Krankheitsverlaufs und der Endergebnisse verglichen. Der hohe Prozentsatz erfolgreicher Resultate mit der Argypulvismethode wird bestaetigt. In drei und wahrscheinlich vier von den insgesamt fuenf Versagern der Behandlung lag die Anamnese einer kuerzlichen suprazervikalen Gebaermutterresektion vor. Saemtliche Versager betrafen Frauen im Alter von 25 bis 39 Jahren und zeigten beim Beginn der Behandlung eine Wasserstoffionenkonzentration in der Scheide von unter sechs. Es werden Vorschlaege gemacht, die zu einem weiteren Ansteigenden Dex guenstigen Resultate fuehren koennen.

SUMÁRIO

A historia, achados, curso de tratamento e resultados são comparados em uma série de 352 casos de vaginites por Trichomonas vaginalis.

A alta percentagem de resultados favoraveis com o argypulvis é confirmada. Tres, e provavelmente quatro, do total de 5 tratamentos fracassados estavam associados com a historia de recente histerectomia supravaginal. Todos os fracassos registrados estavam em associação com idades de 25 a 39 anos e pH vaginal abaixo de 6, ao tempo do inicio do tratamento. Recomendaçóes são dadas povia ulterior obtenção de melhóres resultados.

RESUMEN

Se comparan antecedentes, hallazgos, progreso terapéutico y resultados en una serie de 352 casos de vaginitis por tricomonas. Se confirma el alto porcentaje de resultados saitsfactorios con el procedimiento argipulvis. En cinco fracasos terapéuticos, de tres a cuatro casos se encontraron con antecedentes de histerectomía subtotal reciente. Todos los fracasos ocurrieron en enfermas de 25 a 39 años de edad y pH vaginal inferior a 6 al iniciarse el tratamiento. Se hacen recomendaciones con el fin de aumentar el resultado satisfactorio.

RIASSUNTO

La storia i reperti, il trattamento ed i risultati sono considerati in una serie di 352 casi di vaginite da Trichomonas vaginalis. L'alta percentualità di risultati favorevoli con il trattamento di argypulvis é confermata.

Dei cinque insuccessi tre e probabilmente quattro sono in rapporto con la storia di isterectomia sopravaginale. Gl'insuccessi si sono verificati in soggetti fra i 25 ed i 29 anni e con pH vaginale al di sotto di 6 all'epoca dell'inizio del trattamento. Sono forniti consigli per incrementare ulteriormente la bontà dei risultati.

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Compression Fixation Arthrodesis of the Knee

ARTHUR A MICHELE, M D, AND FREDERICK J KRUEGER, M.D.
STATEN ISLAND, NEW YORK

CONTACT compression and fixation in arthrodesis of the knee can be secured by a double loop steel wire. The antibiotics, as an adjuvant to therapy, have minimized the possibility of spread and facilitate the control of infection. Transfixing pins of the Steinman type, placed at a distance from the site of the arthrodesis, have often caused extension of an infection and further complications due to pressure necrosis. Transfixation by turnbuckle or similar apparatus is often too far removed from the site of the operation for firm and adequate mechanical fixation. The introduction of the Smith-Petersen nail through the site of arthrodesis may have merit if full extension is the position of choice; nevertheless it provides solely for fixation without compression.[1]

The operative technic of using the double loop of stainless steel wire is presented, as well as a case illustrating the authors' method.

Method. — The selection of cases is not important; this method can be used in any case in which conditions are suitable for arthrodesis. It affords wide excision of pathologic tissue and still permits postoperative alignment and fixation.

The knee is exposed under tourniquet control. The type of approach is selected depending upon the number and location of sinus tracts. We prefer the split patella approach of Jones and Brackett, although the "U" approach of Kocher may also have its merits. The patella is removed and can be used for bone grafts when not diseased; otherwise autogenous or homogenous iliac bone is recommended for struts and defects. After removal of the patella, the joint is debrided and all sinus tracts excised. All pathologic bone is removed to a satisfactory level or plateau for fusion. With a wide osteotome, the juxta-articular surfaces are prepared for the desired angle of approximation, which is usually 15 degrees of knee flexion. A No. 1 drill is then used, two complete transverse channels being made across each of the bone ends (Fig. 1) for threading the double loop of wire. The channels nearest the approximated ends are placed slightly anteriorly and approximately 5/8 inch (1.6 cm.) from the bone ends. The channels away from the approximated ends are placed slightly more posteriorly and approximately 1½ to 2 inches (3.8 to 5 cm.) from the bone ends. No. 22 stainless steel wire is then threaded through these drill holes in double loop fashion, as illustrated. The knee is placed in its elected position of flexion and the wires drawn as tightly as possible and secured by twisting the ends. It will be found that this holds the knee fairly solidly in position. Bear in mind, however, that as the long lever ends of the femur and the tibia are cancellous bone, it is necessary to use a support hip spica for immobilization with a cast. After the wiring is completed, an osteotome or circular saw is used to cut slots vertically across the fusion site, (see illustration), and these slots are then packed with either cancellous iliac slivers or slivers prepared from the removed patella. The tourniquet is then temporarily released to secure proper hemostasis. The wound is closed with No. 00 chromic catgut for muscle and fascial layers; No. 00 plain catgut is used for ties and subcutaneous layers, and No. 24 cotton for the skin. No. 24 cotton can be used for the entire procedure. A moderate amount of sterile mechanics' waste is placed about the knee; then sterile sheetwadding is ap-

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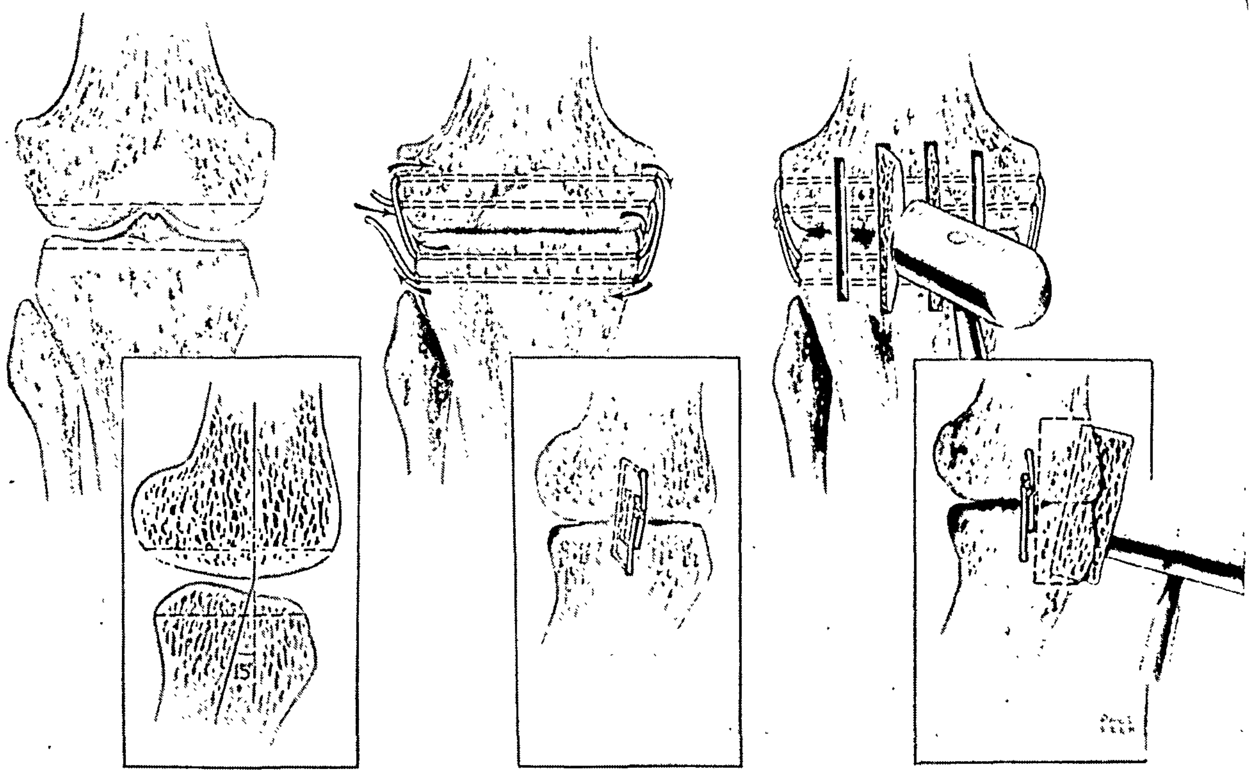

Fig. 1.—Method of double loop stainless steel wire compression-fixation arthrodesis of the knee.

plied over this. A long leg cast with hip spica is applied. At the end of the fourth week the spica is removed, the wound dressed and a long-leg walking cast applied. The patient is allowed to bear weight at the beginning of the fifth week. In the eighth to tenth week the cast is removed, control roentgenograms taken, and physical therapy applied to the foot and leg muscles. By the third month the knee is sufficiently solid for weight bearing.

Aided by the use of antibiotics, the wounds of our patients have healed per primam, all existing sinuses having closed promptly after surgical intervention.

CASE REPORT

J. R., a 27-year-old white seaman, was admitted to the United States Marine Hospital, Staten Island, New York, in March 1947. The history revealed recurrent painful swelling in the patient's right knee during 1945. The pain gradually disappeared during 1946, but the swelling remained. There had been increasing stiffness of the joint, and weight bearing had become painless though restricted. No therapy other than the application of elastic bandages had been used. Three months prior to hospitalization for this ailment, the patient's knee developed three draining sinuses almost simultaneously, one anteromedial, one anterolateral and one posterolateral, all at the level of the knee joint. Three months prior to the development of these draining sinuses he had had rather severe osteoscopic night pains, particularly acute at the distal end of the right femur and at the proximal end of the right tibia. These pains were usually relieved by some motion of the knee and disappeared when drainage started.

The system review revealed a positive history of syphilis five years prior to admission. This was treated by twelve arm shots and thirteen hip shots at intervals during 1942. No subsequent antisyphilitic therapy had been administered. There was no history of either trauma or infection other than syphilis.

Physical examination on admission revealed a range of painless motion from 130 to 150 degrees, the same effect as that achieved on weight bearing. There was a fusiform swelling with draining sinuses, as described. The knee was markedly unstable, and there was loud, rough, crunchy crepitus on passive motion. As compared with the other knee no tenderness or discoloration was noted. There was no notable change in temperature.

Laboratory tests revealed a battery of positive serologic reactions, including the Mazzini and Kahn. The spinal fluid showed a 4 plus positive Mazzini reaction and a colloidal gold curve of 1122321000, a lymphocyte count of 27 and a total protein level of 41. The rest of the laboratory data were not remarkable except that the sedimentation rate was 28 mm. in one hour (Cutler method).

Except for the absence of knee and ankle jerks, the neurologic examination gave normal results.

Two weeks before the arthrodesis the patient was given a six-day course of intramuscular penicillin, totaling 5.4 million units.

On April 1, 1947, the joint debridement and arthrodesis was performed in the manner previously described. Gross observations at the time of the operation revealed a markedly degenerated knee containing a dense yellowish synovium with multiple grapelike clusters of villi, many of which were floating free as loose bodies. The sinuses communicated with the joint. Islands of granulation tissue were present about the sinus tracts as far as the synovium. There was practically no normal cartilage left on the sufaces of the joint. Marked chondromalacia was present, with multiple excavated areas. As much as possible of the synovia was removed, as was the necrotic cartilage and bone, and the arthrodesis was completed.

Pathologic study revealed characteristic

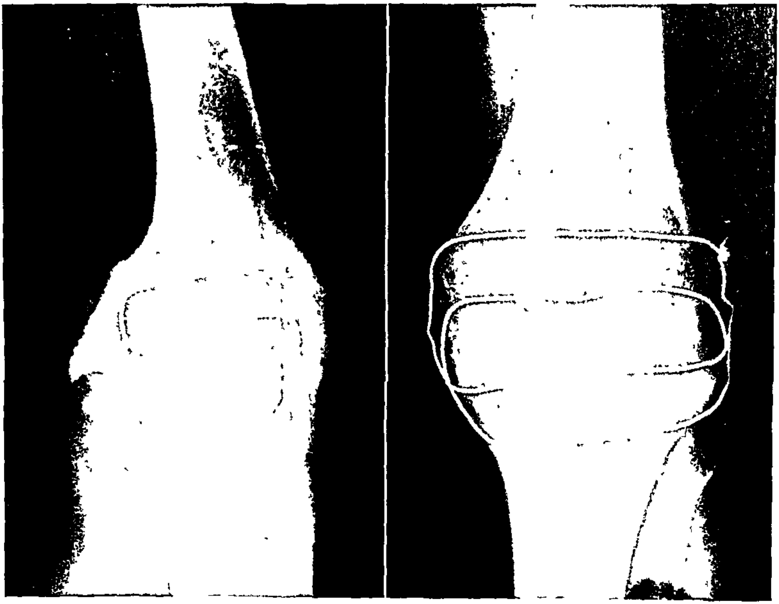

Fig. 2.—Arthrodesis obtained with the double loop stainless steel

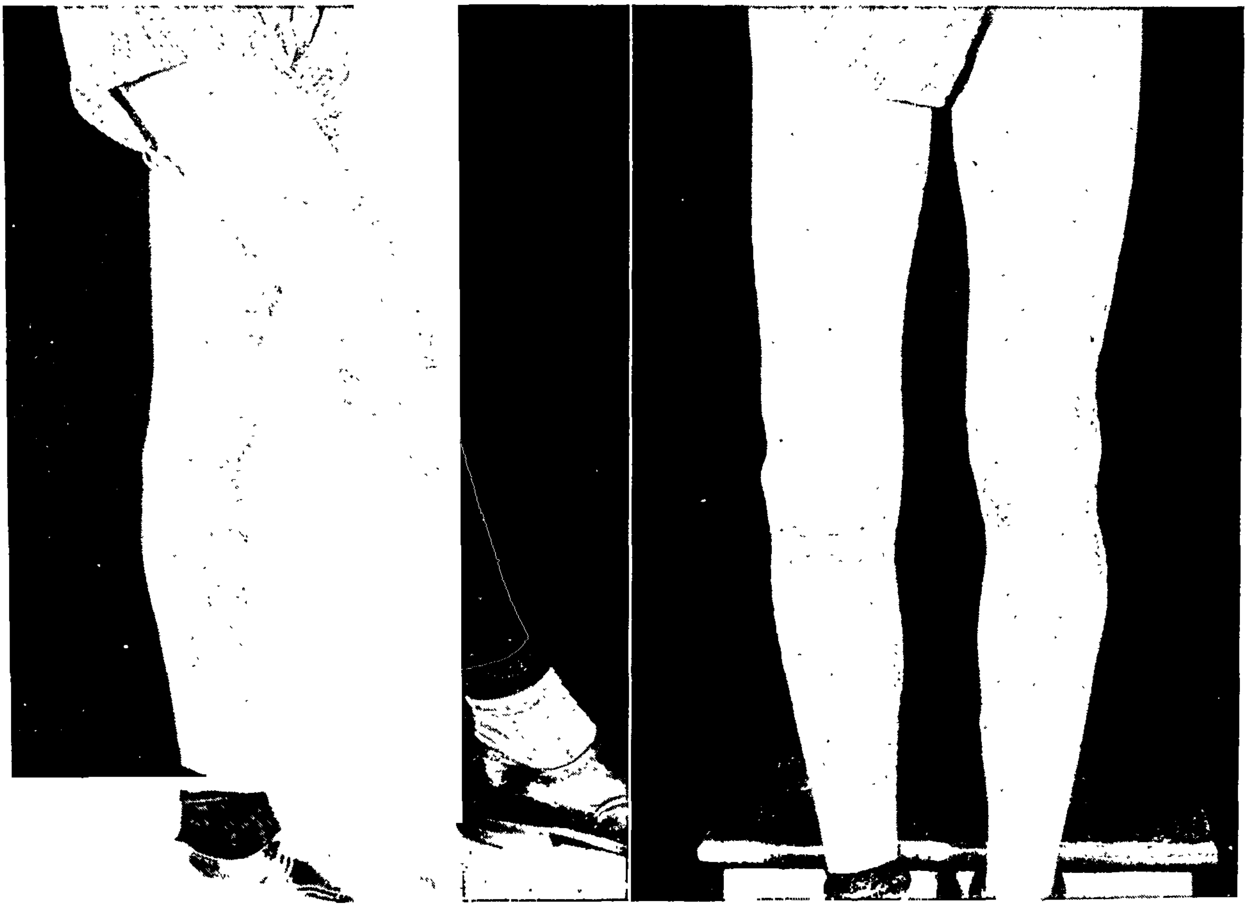

Fig. 3.—Functional results.

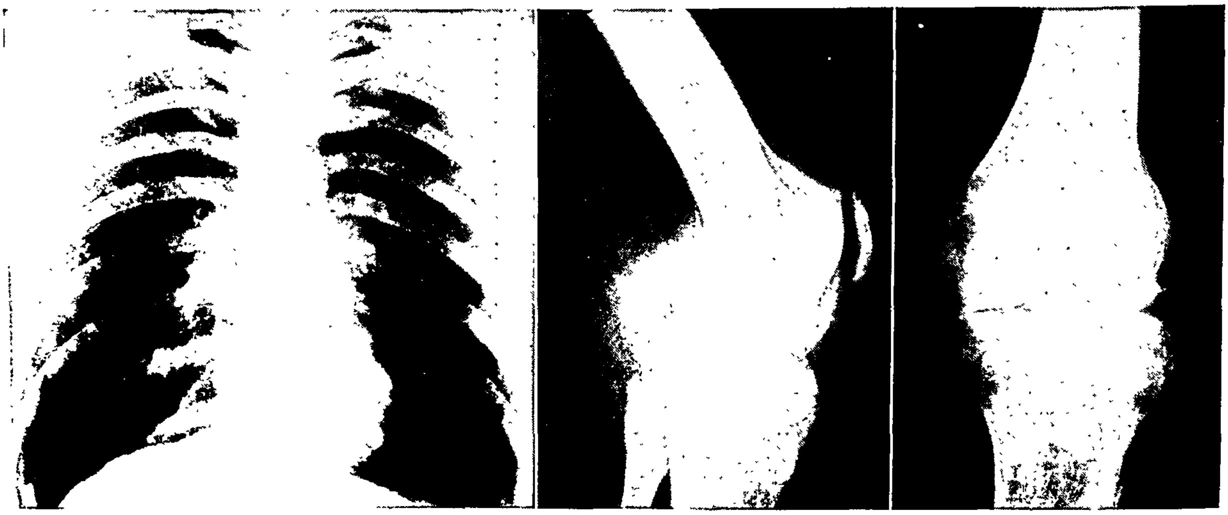

Fig. 4.—*A*, roentgenogram of chest. Thoracic conditions were unremarkable throughout. *B*, preoperative roentgenogram of knee.

foci of monocytes and giant cells in the synovia. There were no acid-fast rods. The pathologic diagnosis was granulomatous synovitis compatible with either tuberculosis or syphilis All cultures, smears and guinea pig inoculations gave negative results for tuberculosis

The patient had an uneventful postoperative course In August 1947, three and one-half months after the arthrodesis, he returned to work as a seaman Repeated examinations revealed a good solid fusion He has had no complaints or trouble referable to the knee, the ankle, the hip or the lower part of the back The present appearance of the affected extremity may be seen in Figures 2 3 and 4, which were taken on his last visit to this hospital in the fall of 1949

SUMMARY

The authors have presented a method of compression fixation arthrodesis of the knee by the use of a double loop of No 22 stainless steel wire with bone struts A case illustrating this procedure is presented

RESUME

Les auteurs presentent un procéde de fixation avec compression d'arthrodese du genou au moyen d'un double cercle avec du fil d'acier inoxydable no 22 et l'adjonction d'os On présente le cas a l'appui

RESUMEN

Se presenta un metodo de artrodesis de la rodilla con una asa doble de alambre de acero inoxidable numero 22 Se ilustra con un caso

SUMÁRIO

Os autôres apresentaram um metodo de artrodese de compressão e fixacão do joêlho com o uso de um duplo laco de fio de aco inoscidavel com expeques de osso Um caso ilusbrativo deste processo e'apresentado

ZUSAMMENFASSUNG

Die Verfasser beschreiben eine Methode der Kniegelenksversteifung durch Kompression und Fixierung mit Hilfe einer doppelten Drahtschlinge [No 22] aus rostfreiem Stahl und von Knochenverstrebungen Ein erlaeuternder Fall wird vorgestellt

RIASSUNTO

L'AA *presentano un metodo di artrosi* del ginocchio a fissazione compressa per uso di doppio nastro di filo metallico non corrosivo con scheggie di ossa Un caso dimostrando questo procedimento e' *offerto*

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Let the despairing race of men know that there is no sign of decay, but universal uninterrupted vigor All waste and ruin has a speedy period

—*Thoreau*

Estradiol Implants in Postoperative Pituitary Exophthalmos

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EXOPHTHALMOS may be due to exophthalmic goiter, xanthomatosis, pituitary dysfunction, contusion, retrobular aneurysm, cavernous sinus thrombosis or severe shock. Recognition of the type of exophthalmos is essential to its treatment. The exophthalmos of hyperthyroidism may be either thyrotoxic or thyrotropic in origin, but the origin of progressive proptosis of hypothyroidism can be only hypophysial.

Thyrotropic hormone from the anterior lobe of the pituitary gland has been used in the production of experimental exophthalmos is guinea pigs. This is produced more readily in thyroidectomized than in intact animals.[1]

Estrogens and androgens are well known to suppress effectively the gonadotropic function of the anterior pituitary lobe. Estrogens and androgens have been used similarly in attempts to suppress other anterior pituitary functions, including the adrenocortical and the thyrotropic. Production of thyrotropic hormone is low in persons with Graves' disease, increases after thyroidectomy and is greatly elevated in the presence of malignant exophthalmos.[2] These experimental facts and laboratory observations led several investigators to the use of androgens and estrogens in an attempt to suppress thyrotropic hormone production in treating exophthalmos of pituitary origin.[3] In view of our previous demonstration of the estrogenic efficacy of steroid implants for the menopause[4] and for prostatic carcinoma,[5] we decided to employ this form of estrogen therapy in a case of pituitary exophthalmos.

REPORT OF CASE

G. D., a white man aged 52, was admitted to Mercy Hospital on Jan. 7, 1950. He complained of severe midepigastric pain one hour after eating, with occasional gaseous eructations. Tarry stools had been noticed for ten days. Operation had been performed in 1935 for perforation of a gastric ulcer.

Physical Examination. — The results of physical examination were essentially negative except for a well healed abdominal scar. The blood pressure was 110 systolic and 70 diastolic.

Roentgen Examination.—There was a large gastric ulcer on the lesser curvature of the stomach at the juncture of the pars media and the gastric antrum. Marked gastritis was present, with duodenitis and jejunitis. The skull and the neck revealed no abnormality. The chest showed an increase in fibrotic elements of both lung fields. The left side of the diaphragm appeared slightly elevated and thickened, and the left costophrenic angle was partially obliterated. There was no evidence of any substernal filling lesion.

Laboratory Studies.—The stools and the urine were essentially normal. On January 8 a blood count showed 4,500,000 erythrocytes per cubic millimeter of blood, with 14 Gm. of hemoglobin; 17,900 leukocytes per cubic millimeter, with a differential count of 83 per cent polymorphonuclears, 11 per cent lymphocytes, 6 per cent monocytes and 1 per cent eosinophils. On January 9 the count ran as follows: erythrocytes, 4,420,000; hemoglobin, 13.5 Gm.; leukocytes, 15,000, with 85 per cent polymorphonuclears, 3 per cent basophils, 8 per cent lymphocytes, 3 per cent nonocytes and 3 per cent eosinophils.

On January 12 the value for serum protein was 7.72 Gm. per hundred cubic centimeters. On January 18 the value for blood chlorides was 468 mg.

Treatment and Course.—The patient was transferred to the surgical ward on January 14. He was given 500 cc. of whole blood on

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January 16 On the following day a subtotal gastrectomy with posterior gastrojejunostomy was performed Numerous dense adhesions were present, surrounding the entire stomach During the operation 1,000 cc of whole blood was given, followed by an additional 500 cc in the evening of the same day The same amount was given on January 18 and 19 respectively The blood pressure in millimeters of mercury was 110 systolic and 70 diastolic

A Wangensteen tube was inserted on the morning of the operation and kept in place by adhesive tape until the fourth postoperative day The postoperative course was uneventful until January 25, when exophthalmos was noted

On January 24 the value for hemoglobin was 16 Gm There were 18,000 leukocytes per cubic millimeter of blood, with 76 per cent polymorphonuclears, 16 per cent lymphocytes, 3 per cent monocytes and 5 per cent eosinophils

On January 27 the leukocyte count was 4 500, with 67 per cent polymorphonuclears 19 per cent lymphocytes, 5 per cent monocytes, 7 per cent eosinophils and 2 per cent basophils The blood pressure was 110 systolic and 70 diastolic

On January 28 exophthalmos was very pronounced The eosinophil count had increased to 9 per cent Adrenal cortical extract was given The value for blood chlorides was 490 mg per hundred cubic centimeters The basal metabolic rate was plus 1 An ophthalmologic consultation showed that characteristics of exophthalmos were present, and palliative measures were instituted

On January 30 the exophthalmos was subsiding The erythrocyte count was 4 600 000 and the value for hemoglobin 15 Gm The leukocyte count was now 12,500, with 3 per cent eosinophils

On February 3 the value for hemoglobin was 16 Gm The leukocyte count was 12 500, with 2 per cent eosinophils

By February 7 the wound had healed and the exophthalmos regressed On February 10 all medication was discontinued and the pation discharged to the outpatient department The exophthalmos had completely receded The blood pressure was 110 systolic and 70 diastolic

Pathologic Report—The resected segment of stomach measured 11 cm along the lesser curvature and 13 5 cm along the greater curvature A huge ulcer crater, 5 by 3 cm, was present on the lesser curvature There was no evidence of malignancy Palliative treatment of exophthalmos was given during hospitalization with Lugol s solution, 10 drops four times a day and phenobarbital, ½ grain, four times a day Penicillin and zinc sulfate solution were applied to the eyes Adrenal cortex extract, 5 cc was given intramuscularly twice daily The patient was encouraged to increase his salt intake to about 20 Gm daily, in the proportion of 4 parts of sodium chloride to 1 part of potassium chloride

On March 28 the patient was readmitted because of marked exophthalmos with lid lag The lenses appeared opaque, and there were bubble-like lesions within the lens proper The abdominal wound was well healed There was no gastric discomfort The patient tolerated all food He was again given Lugol's solution, 15 drops four times a day Phenobarbital, ¼ grain four times a day and adrenal cortical extract 5 cc twice daily were administered He was also given 1 gr of thyroid twice a day This therapeutic regimen was continued until April 7

On April 3 two 25 mg estradiol pellets* were implanted into the subcutaneous tissue over the anteromedial aspect of the right thigh

On April 3 the lid lag measurements were 10/16 for the right eye and 11/16 for the left The eosinophil count on March 31, April 3, April 4 and April 6 was 3 per cent, 7 per cent, 9 per cent and 1 per cent respectively

On April 7 the adrenal cortical extract was discontinued and on the following day the eosinophil count was 4 per cent

On April 9 the exophthalmos showed 50 per cent recession The patient was discharged to the outpatient department The lid lag measurements on April 10 were 7/16 for the left eye and 8/16 for the right, on April 20, 6/16 for the left eye and 7/16 for the right, and on May 8, 6/16 for the left eye and 7/16 for the right

Recession of the exophthalmos was more dramatic The eosinophil count subsequently varied between 2 per cent and 4 per cent No allergic phenomena could be detected at any time The urinary output of 17-ketosteroids was 3 9 mg per twenty four hours, considerably below the normal 12 to 15 mg

Constant elevation of the eosinophil count together with the low urinary output of 17-

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*Supplied by Schering Corporation as Progynon Pellets through the courtesy of Dr W H Stoner

Estradiol Implants in Postoperative Pituitary Exophthalmos

M. V. OKIE, M.D., H. B. DENEE, M.D., AND WILLIAM DALEY, M.D.
BUFFALO, N. Y.

EXOPHTHALMOS may be due to exophthalmic goiter, xanthomatosis, pituitary dysfunction, contusion, retrobular aneurysm, cavernous sinus thrombosis or severe shock. Recognition of the type of exophthalmos is essential to its treatment. The exophthalmos of hyperthyroidism may be either thyrotoxic or thyrotropic in origin, but the origin of progressive proptosis of hypothyroidism can be only hypophysial.

Thyrotropic hormone from the anterior lobe of the pituitary gland has been used in the production of experimental exophthalmos is guinea pigs. This is produced more readily in thyroidectomized than in intact animals.[1]

Estrogens and androgens are well known to suppress effectively the gonadotropic function of the anterior pituitary lobe. Estrogens and androgens have been used similarly in attempts to suppress other anterior pituitary functions, including the adrenocortical and the thyrotropic. Production of thyrotropic hormone is low in persons with Graves' disease, increases after thyroidectomy and is greatly elevated in the presence of malignant exophthalmos.[2] These experimental facts and laboratory observations led several investigators to the use of androgens and estrogens in an attempt to suppress thyrotropic hormone production in treating exophthalmos of pituitary origin.[3] In view of our previous demonstration of the estrogenic efficacy of steroid implants for the menopause[4] and for prostatic carcinoma,[5] we decided to employ this form of estrogen therapy in a case of pituitary exophthalmos.

REPORT OF CASE

G. D., a white man aged 52, was admitted to Mercy Hospital on Jan. 7, 1950. He complained of severe midepigastric pain one hour after eating, with occasional gaseous eructations. Tarry stools had been noticed for ten days. Operation had been performed in 1935 for perforation of a gastric ulcer.

Physical Examination. — The results of physical examination were essentially negative except for a well healed abdominal scar. The blood pressure was 110 systolic and 70 diastolic.

Roentgen Examination.—There was a large gastric ulcer on the lesser curvature of the stomach at the juncture of the pars media and the gastric antrum. Marked gastritis was present, with duodenitis and jejunitis. The skull and the neck revealed no abnormality. The chest showed an increase in fibrotic elements of both lung fields. The left side of the diaphragm appeared slightly elevated and thickened, and the left costophrenic angle was partially obliterated. There was no evidence of any substernal filling lesion.

Laboratory Studies.—The stools and the urine were essentially normal. On January 8 a blood count showed 4,500,000 erythrocytes per cubic millimeter of blood, with 14 Gm. of hemoglobin; 17,900 leukocytes per cubic millimeter, with a differential count of 83 per cent polymorphonuclears, 11 per cent lymphocytes, 6 per cent monocytes and 1 per cent eosinophils. On January 9 the count ran as follows: erythrocytes, 4,420,000; hemoglobin, 13.5 Gm.; leukocytes, 15,000, with 85 per cent polymorphonuclears, 3 per cent basophils, 8 per cent lymphocytes, 3 per cent nonocytes and 3 per cent eosinophils.

On January 12 the value for serum protein was 7.72 Gm. per hundred cubic centimeters. On January 18 the value for blood chlorides was 468 mg.

Treatment and Course.—The patient was transferred to the surgical ward on January 14. He was given 500 cc. of whole blood on

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January 16. On the following day a subtotal gastrectomy with posterior gastrojejunostomy was performed. Numerous dense adhesions were present, surrounding the entire stomach. During the operation 1,000 cc. of whole blood was given, followed by an additional 500 cc. in the evening of the same day. The same amount was given on January 18 and 19 respectively. The blood pressure in millimeters of mercury was 110 systolic and 70 diastolic.

A Wangensteen tube was inserted on the morning of the operation and kept in place by adhesive tape until the fourth postoperative day. The postoperative course was uneventful until January 25, when exophthalmos was noted.

On January 24 the value for hemoglobin was 16 Gm. There were 18,000 leukocytes per cubic millimeter of blood, with 76 per cent polymorphonuclears, 16 per cent lymphocytes, 3 per cent monocytes and 5 per cent eosinophils.

On January 27 the leukocyte count was 4,500, with 67 per cent polymorphonuclears, 19 per cent lymphocytes, 5 per cent monocytes, 7 per cent eosinophils and 2 per cent basophils. The blood pressure was 110 systolic and 70 diastolic.

On January 28 exophthalmos was very pronounced. The eosinophil count had increased to 9 per cent. Adrenal cortical extract was given. The value for blood chlorides was 490 mg. per hundred cubic centimeters. The basal metabolic rate was plus 1. An ophthalmologic consultation showed that characteristics of exophthalmos were present, and palliative measures were instituted.

On January 30 the exophthalmos was subsiding. The erythrocyte count was 4,600,000 and the value for hemoglobin 15 Gm. The leukocyte count was now 12,500, with 3 per cent eosinophils.

On February 3 the value for hemoglobin was 16 Gm. The leukocyte count was 12,500, with 2 per cent eosinophils.

By February 7 the wound had healed and the exophthalmos regressed. On February 10 all medication was discontinued and the pation discharged to the outpatient department. The exophthalmos had completely receded. The blood pressure was 110 systolic and 70 diastolic.

Pathologic Report.—The resected segment of stomach measured 11 cm. along the lesser curvature and 13.5 cm. along the greater curvature. A huge ulcer crater, 5 by 3 cm., was present on the lesser curvature. There was no evidence of malignancy. Palliative treatment of exophthalmos was given during hospitalization with Lugol's solution, 10 drops four times a day and phenobarbital, ½ grain, four times a day. Penicillin and zinc sulfate solution were applied to the eyes. Adrenal cortex extract, 5 cc. was given intramuscularly twice daily. The patient was encouraged to increase his salt intake to about 20 Gm. daily, in the proportion of 4 parts of sodium chloride to 1 part of potassium chloride.

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ketosteroids, was interpreted to indicate adrenal failure or hypofunction of the adrenal cortex. Desoxycorticosterone,* 5 mg. every three to four days, was given intramuscularly. The eosinophil count became normal and has remained so to the time of writing.

SUMMARY

A case is presented in which exophthalmos following abdominal surgical intervention was treated effectively by depression of anterior pituitary production of thyrotropic hormone with implantation of estradiol pellets.

RÉSUMÉ

On rapporte un cas d'exophtalmie consécutive à une intervention chirurgicale abdominale. Cette affection fut traitée avec succès par la réduction des hormones thyrotropiques du lobe antérieur hypophysaire consécutif à l'implantation de "pellets" d'estradiol.

ZUSAMMENFASSUNG

Es wird ein Fall von im Anschluss an eine Bauchoperation aufgetretenem Exophthalmus beschrieben, der durch Herabsetzung der Produktion des thyreotropen Hormons des Hypophysenvorderlappens erfolgreich mittels Einpflanzung von Estradiolkuegelchen behandelt wurde.

SUMÁRIO

Um caso e'apresentado no qual a exoftalmia que se apresentou em seguida a'uma intervencão cirurgica abdominal foi bratada com sucesso pelo frenamento da producão do harminio tirestró pico do lo'bo pituitario anterior, com implantacão de graõs de estradiol.

RIASSUNTO

Presenta un caso nella quale esoftalmo seguente chirurgia addominale fu trattato effettivamente per depressione del prodotto pituitario del ormone tirotropico coll'impiantamento di pallette di estradiol.

RESUMEN

Se presenta un caso de exoftalmía consecutiva a intervención quirúrgica abdominal, tratado efectivamente reduciendo la producción anterohipofisiaria de hormona tirotrópica con la implantación de comprimidos de estradiol.

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Surgical Aspects of Meckel's Diverticulum

A B McGRAW, M.D , F A C S
DETROIT

FAILURE of complete closure of the omphalomesenteric duct during withdrawal of the extracelomic gut into the abdominal cavity of the fetus during the eighth week of gestation gives rise to the diverticulum associated with the name of Johann Friedrich Meckel the Younger (1781-1833), of Halle, Germany. He was the youngest of three generations of eminent scientists, each of whom made significant contributions in the fields of anatomy and embryology. He was also the first to describe the embryologic development and the histologic and pathologic character of this congenital anomaly. Its existence, however, had been noted and recorded several times in the medical literature of the previous three hundred years, first by Hildanus in 1598 and later by Lavater in 1671, by Ruish in 1707, by Littré in 1742 and by Morgagni in 1769.

Reports of various large series of autopsies indicate that this anomaly occurs in about 2 per cent of human beings, the male predominating in the ratio of 2:1. At our clinic 48 Meckel's diverticula were observed in 4,200 consecutive autopsies.

The fairly frequent harboring of such a diverticulum harmlessly throughout life tends to create a feeling that it is little more than an anatomic curiosity. There is too little general realization of the seriousness and sometimes the urgency of certain acute abdominal conditions in which these diverticula play the causal role. Even the chance finding of such a diverticulum during laparotomy for another condition sometimes leads to no more than its mention in the operative note. I regret to say that in our series of 28 chance encounters, 4 of these diverticula were left untouched.

During the same period an equal number of cases (28) were encountered in which a Meckel's diverticulum was found to be the cause either of an acute abdominal emergency (in 20) or of a series of subacute episodes (in 8). It is with these 28 cases and certain instructive points gained from their study that this paper is chiefly concerned.

A Meckel's diverticulum may be the cause of a serious abdominal condition by (1) its involvement in an acute inflammatory process, (2) its participation in an acute intestinal obstruction and (3) as a result of bleeding and/or perforation of a peptic ulcer within its lumen. Accurate diagnosis of an acute inflammatory flare-up is frequently missed. All the symptoms and signs of acute appendicitis are exactly simulated, and this much more likely yet mistaken diagnosis was made 5 times in this series. No harm came to any of the patients, because the inadequacy of the appendix to explain the symptoms was recognized and the diverticulum sought for and removed. Neglect of such search could well have led to catastrophe. In this connection, accurate observations of the location of the diverticulum in the ileum made in this series of cases may be of importance. Our experience indicates that only 4 per cent of such diverticula lie within the terminal 6 inches (15.2 cm.) of the ileum. Twenty-eight per cent lie within the terminal 18 inches (45.7 cm.) and 72 per cent within the terminal 36 inches (91.4 cm.). That leaves 28 per cent, or more than 1 out of 4 diverticula, *lying more than 3 feet above the ileocecal* junction. As one in our series lay 66 inches (1 m., 67 cm.) above the ileocecal valve, we urge that at least the terminal 6 feet of the ileum be inspected in searching for a Meckel's diverticulum.

There are so many causes of small bowel obstruction that only failure to in-

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A case is presented in which exophthalmos following abdominal surgical intervention was treated effectively by depression of anterior pituitary production of thyrotropic hormone with implantation of estradiol pellets.

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In 2 cases of bleeding the patients had had appendectomies elsewhere without further search. One, a boy aged 12, continued to have pain and sometimes tarry stools for a year after appendectomy and was admitted with a hemoglobin value of 8.6 Gm. per hundred cubic centimeters. Operation after transfusion revealed a short diverticulum with both bleeding and perforation of an ulcer at its tip. The other patient, a girl, also 12 years old, had had bleeding and abdominal discomfort off and on since the age of 4 and had had an appendectomy two years before we saw her. She, too, had a peptic ulcer in the tip of a long diverticulum. Both patients were relieved by resection and anastomosis.

With regard to the surgical treatment of these diverticula, I am strongly in favor of either excising the diverticulum at its base or resecting the segment of ileum containing the diverticulum. In the entire series of 55 operative cases, excision was done in 36 and resection in 14. Simple excision is adequate and satisfactory when there is no inflammatory reaction involving the base of the diverticulum and the adjacent bowel wall. Placing the line of excision obliquely across the base of the diverticulum, according to the method suggested by Ladd, is of great practical importance. When excision is not possible, resection of the involved section of ileum, together with the diverticulum, is the method of choice. The continuity of the bowel may be reestablished equally well by end-to-end or side-to-side anastomosis. I do not favor simple inversion of these diverticula, however small they may be, on account of the possibility of atypical mucosal and peptic ulceration; and for the same reason I am very much opposed to leaving them in situ.

Although peptic ulcer in a Meckel's diverticulum is the most frequent cause of severe intestinal bleeding in infants and young children, there are a number of other nonsurgical causes that should be thought of in differential diagnosis and if possible ruled out by hematologic and other studies. These other conditions are hemophilia, purpura hemorrhagica, intestinal polyps, intestinal hemangiomas and Henoch-Schönlein's disease. I do not, however, consider it wise to attempt roentgen proof of the presence of a Meckel's diverticulum when severe recent bleeding has occurred.

SUMMARY

The author outlines the three most important surgical complications associated with Meckel's diverticulum, the acute inflammatory, the acute obstructive and the hemorrhagic. Of these, the hemorrhagic cases are no less urgently in need of prompt treatment than are the other two groups. They are moreover the very cases in which a correct presumptive diagnosis can most dependably be made if one understands the underlying pathologic condition and is alerted by unmistakable symptoms and signs. Evidence is submitted that 1 of every 4 such diverticula may lie much farther from the ileocecal junction than is generally believed. It is urged that such diverticula be completely excised or resected rather than inverted or left alone, whether they are encountered by chance or as the cause of an acute abdominal emergency.

ZUSAMMENFASSUNG

Der Verfasser beschreibt die drei wichtigsten chirurgischen Komplikationen des Meckelschen Divertikels, naemlich die akute Entzuendung, den akuten Verschluss und die Blutung. Die blutenden Faelle beduerfen einer sofortigen Behandlung genau so dringend wie die Kranken der anderen beiden Gruppen. Ja, gerade diese Faelle sind es, in denen eine richtige Wahrscheinlichkeitsdiagnose mit grosser Zuverlaessigkeit gestellt werden kann, wenn die zugrunde liegenden pathologischen Veraenderungen richtig verstanden werden und unverkennbare Symptome und Krankheitszeichen nicht der Aufmerksamkeit entgehen. Wir haben den Beweis erbracht, dass unter je vier

clude thought of a participating Meckel's diverticulum in the differential diagnosis can be criticized. The participation of this lesion should particularly be thought of as the cause of a suspected intussusception, and, if an intussusception is reduced by the method of Ravitch, careful subsequent roentgen search for the diverticulum should be made. The roentgen diagnosis is difficult to make, and the demonstration of a persistent segment of barium lying at an angle with the rest of the ileum requires many serial roentgenograms of the small bowel, taken as often as ten minutes apart. When found at operation to be the cause of an intussusception, the diverticulum should be removed then and there if the patient's condition permits; otherwise, by a later operation.

The history of 1 case in the present series is illustrative. The patient, a boy, first underwent a surgical procedure at the age of 14 months for supposed appendicitis. At that time the appendix was removed and an ileocecal intussusception of 10 inches (25.4 cm.) of the ileum was reduced. The boy continued to have episodes of abdominal pain with vomiting. At the age of 5 years he was again admitted to the hospital with bright bloody stools, a mass in the right lower abdominal quadrant, nausea and vomiting. The preoperative diagnosis of intussusception with Meckel's diverticulum was confirmed at operation, and the intussuceptum was found to extend to the hepatic flexure. Because of the child's poor condition the surgeon elected to forego resection, as the bowel appeared to be viable, and he sutured the cecum and the lower portion of the ileum to the lower abdominal wall. Six months later the child was readmitted with another intussusception, which was led by the diverticulum. Resection of 10 cm. of the ileum was done, and the child has since been symptom-free.

Three other ways in which a Meckel's diverticulum may participate in obstruction of the small bowel are by incarceration in a hernia sac, by congenital attachment to the umbilicus, either directly or by a persisting fibrous band, and by inflammatory adhesions to the abdominal wall or to another segment of bowel. Each condition was encountered at least once in this series.

The most serious condition associated with Meckel's diverticulum is massive bleeding. It has long been known that part or all of the mucous membrane of such a diverticulum may consist of heterotopic gastric or duodenal mucosa. Peptic ulceration of such heterotopic mucosa with consequent bleeding may occur in early infancy and is prone to occur at some time before adolescence. It is the commonest source of massive bleeding in infants and young children, and failure to suspect this diagnosis and to act promptly on suspicion cannot be excused. This diagnosis was made and our suspicions confirmed in 8 of our 20 cases of acute involvement. Bleeding is poorly tolerated by infants and young children, especially a second hemorrhage following close on the heels of the initial episode. It is therefore important not only to make the diagnosis but to resort promptly to surgical intervention and not try expectant or conservative treatment. Unlike the bleeding of a duodenal ulcer, which is difficult to control, bleeding from a Meckel's diverticulum is quickly and easily controlled by excision or resection of the offending anomaly. The condition of our youngest patient with hemorrhage was diagnosed from massive bleeding at the age of three months. Conservative treatment nearly proved fatal, owing to a second hemorrhage one month later. At operation a very long diverticulum was found, bleeding from an ulcer close by its juncture with the normal bowel. On account of the infant's feeble condition, all that was done was rapid excision of the ulcer-bearing segment and exteriorization of the two ends of ileum and the opened base of the diverticulum. On the fourteenth postoperative day the baby's condition permitted resection of the long (28 cm.) diverticulum, together with the bowel to which it was adherent.

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Faellen sich einer befindet, in dem das Divertikel viel weiter von der Ileocoekalklappe entfernt liegt als allgemein angenommen wird. Wir haben angeregt, solche Divertikel, gleichgueltig ob sie zufaellig oder als Ursache eines akuten Bauchfalles zur Beobachtung kommen, vollstaendig zu resezieren, anstatt sie einzustuelpen oder unbehandelt zu lassen.

RESUMEN

El autor señala las tres más importantes complicaciones quirúrgicas asociadas con el divertículo de Meckel: la inflamatoria aguida, la obstructiva aguda y la hemorrágica. De estas, los casos hemorrágicos necesitan menos urgentemente del tratamiento pronto que los de los otros dos grupos. Son a mayor abundamiento los verdaderos casos en que un diagnóstico de presunción correcto puede depender mucho del conocimiento del estado patológico existente, advertido uno de síntomas y signos inequívocos. Se manifiesta la evidencia de que de cada cuatro divertículos uno puede estar mucho más distante de la unión ileocecal de lo que generalmente se cree. Se señala la urgencia de que tales divertículos deben ser completamente extirpados o resecados más bien que invertidos o abandonados, en caso de encontrarse por casualidad o debido a una emergencia abdominal aguda.

RIASSUNTO

L'A. delinea le tre piu importanti complicazioni chirurgiche associato col diverticolo di Meckel l'infiammatorio acuto, l'ostruttivo acuto e emorragico. Di questi, i casi emorragichi non sono meno urgente di trattamento che sono i due altri gruppi. Sono altronde i veri casi in cui una corretta diagnosi presentiva si puo' fare con fiducia se uno comprende la condizione patologica sostenuto e stante all'erta a sintomi e segni non suscettibile di sbaglio. Abbiamo sommesso prova che uno di ogni quattro pari diverticoli puo' stendersi piu lontano dalla congiunzione ileocecale che e' generalmente creduto. Abbiamo richiesto estirpazione e risezione completa di tale diverticoli piutosto dell'inversione o l'abbandonamento, siano riscontrati per caso o a ragione d'un avvenimento acuto addominale.

SUMÁRIO

O autor descreve as tres mais importantes complicações cirúrgicas associadas ao diverticulo de Meckel:—a complicação inflamatória aguda, a c. aguda obstrutiva e a hemorragica. Os pacientes com complicações hemorragicas necessitam tanto de tratamento quanto os pertencentes aos dois restantes grupos. Eles representam, realmente, os muitos casos nos quais o diagnóstico provavel póde ser feito si a primitiva condição patologica fôr tomada em conta, como tambem si os sintomas e signais patognomônicos forem observados a tempo. O autor tenta estabelecer que 1 de cada 4 entre tais diverticulos póde ser da união ileo-coecal, aó contrario do que geralmente se supõe. A completa excisão on ressecção de tais diverticulos se impõe preferivelmente a invertêl-os ou deixal-os quando são incidentalmente encontrados ou quando constituem a causa de um abdomen agudo cirúrgico.

RÉSUMÉ

L'auteur rapporte ici les trois plus graves complications du diverticule de Meckel, à savoir l'inflammation aigue, l'occlusion aigue et l'hémorragie. L'hémorragie doit être traitée aussi rapidement que les deux autres. Il existe cependant certains cas où, plus qu'une présomption, même un diagnostic certain est fait en se basant sur des symptômes précis et en comprenant très bien la pathogénie de la lésion. L'auteur a démontré de toute évidence que dans la proportion d'un sur quatre, le diverticule est plus éloigné de la jonction iléo-coécale qu'on ne le croit habituellement. L'auteur insiste qu'une résection complète avec extirpation soit faite du diverticule plutôt que de l'inverser et le laisser en place, soit qu'on le trouve par hasard ou durant une crise aigue de l'abdomen.

Gallstones in Stomach Wall with Symptoms of Pyloric Stenosis

Report of a Case

HALIT ZIYA KONURALP, M D, F I C S
ISTANBUL, TURKEY

IT IS not uncommon for gallstones to pass through a fistula that has been formed between the gallbladder bile ducts and some other organ. Such fistulas are formed by ulceration and necrosis due to inflammation and pressure at the site of the gallstones. The gallbladder is the organ most often involved and the most common site is the fundus.

Quite a few reports on this subject are to be found in the literature. Gallstones have been discovered in the bronchi, in the pleural cavity, in the renal pelvis, in the urinary bladder, in the gravid uterus and even in ovarian cysts. Their most common migration, however is to the duodenum or the large intestine. Occasionally they may reach the stomach.

These migrating stones are usually found in the lumen (very rarely in the walls) of the organs into which they have moved. Thus far only two cases have been reported, one by Makkas (*Zentralbl. f. Chir.* May 20, 1930) and one by W. Siemens *Zentralbl. f. Chir.*, 59:267-270, Jan. 30, 1932). Both of these authors found gallstones in the walls of the duodenum.

It is not uncommon to find the gallbladder opening into the stomach and allowing gallstones to pass into this organ. In many cases the migration takes place asymptomatically. For this reason the case here reported is especially interesting, as the gallstones were located in the walls of the stomach, not in the lumen, and gave rise to clinical signs and symptoms of pyloric stenosis.

REPORT OF CASE

History.—The patient, a 26-year-old housewife with one child, was sent to me by a physician because of continuous vomiting, loss of weight and no response to medical treatment. She was hospitalized on Jan. 1, 1947. Her complaints had begun three years previously, with nausea, vomiting and pain in the epigastric region extending to the back. Pain was most severe after meals especially if fat fried food or eggs were eaten, but some-

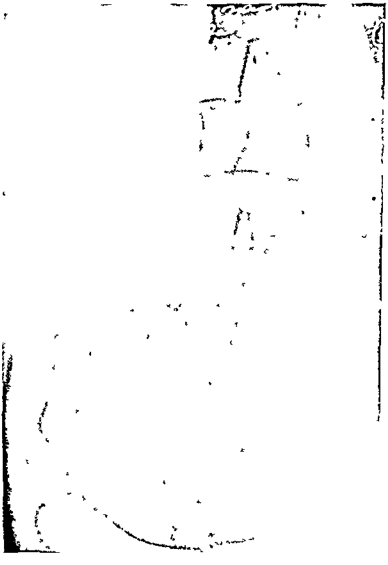


Fig. 1.—Roentgenogram taken after barium meal, showing bowl-shaped stomach with great dilatation.

From the Surgical Clinic University of Istanbul School of Medicine Istanbul Turkey
Submitted for publication Nov 14 1948

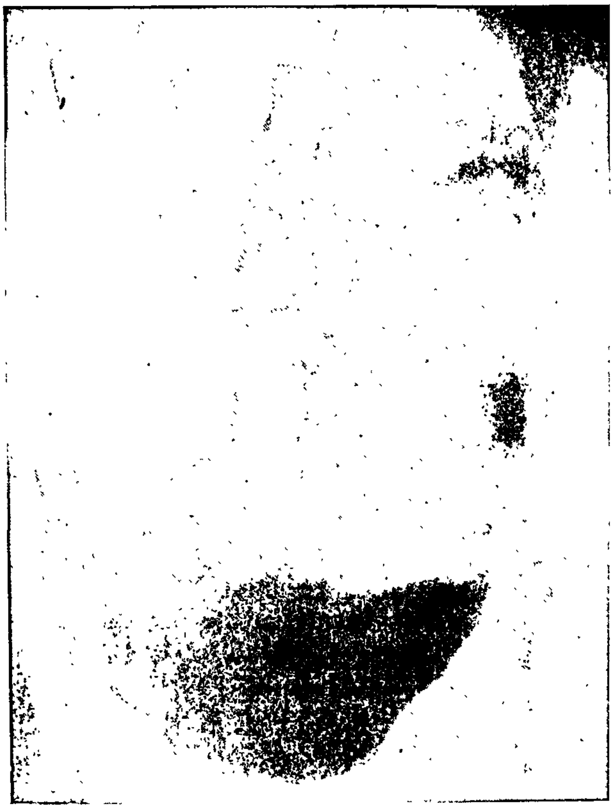


Fig. 2.—Roentgenogram taken six hours later, showing remainder of barium meal in stomach.

times it appeared without relation to meals. During this period the temperature was not elevated but the patient was slightly jaundiced. Her attacks of pain would usually last for three or four days then recede, and after a lapse of a few days occur again. At the beginning the vomitus was composed of wash food and bile.

The early episode had been treated by a three month period of medication and diet. The patient improved and was in good condition for two years. Nine months before she consulted me the nausea and vomiting recurred. Diet and repetition of the previous medication brought about no improvement, and during the last months of this period vomiting was almost continuous, the vomitus containing particles of food eaten two days before. During the entire three year period the patient noticed no blood in the vomitus or in the stools. During the last few months before operation, the patient was too weak to stand. She was constipated and the urine was scanty.

The history included an attack of malaria in addition to the present illness.

Clinical Examination.—The patient appeared weak, emaciated and dehydrated but otherwise normal. She weighed 32 Kg. and was somewhat pale and anemic. The conjunctivae were subicteric. There was no subcutaneous fat tissue. The temperature was normal and the arterial blood pressure was 110 systolic and 80 dyastolic. The tongue was dry and coated. The lower margin of the stomach was two finger breadths above the sumphysis pubis. Traube's space was very wide. The pyloric region was sensitive and painful on pressure. The liver and the spleen were not palpable.

Laboratory Tests.—Examination of the urine revealed no abnormality. The bleeding time was 4.5 minutes; the coagulation time, eight minutes. The erythrocyte count was 3,000,000; the leukocyte count, 6,500, and the thrombocyte count, 280,000. The hemoglobin value was 56 per cent. The Wassermann test gave negative results. On abdominal examination a positive Kussmaul sign was observed, and below the level of the umbilicus clupotage was obvious.

Roentgen Examination.—The roentgenograms showed an atomic stomach occupying the larger portion of the abdomen, its lower margin reaching the pubis. The pyloric canal and the bulbus could not be seen. The stomach seemed to contain an abnormal amount of mucous and three are no plica. After six hours no change had been noted, and even with pressure the barium did not pass through the pyloris. The diagnosis was pyloric stenosis.

Operation.—After the usual preparation the patient was operated on (March 7, 1947). Local and paravertebral anesthesia (novocaine

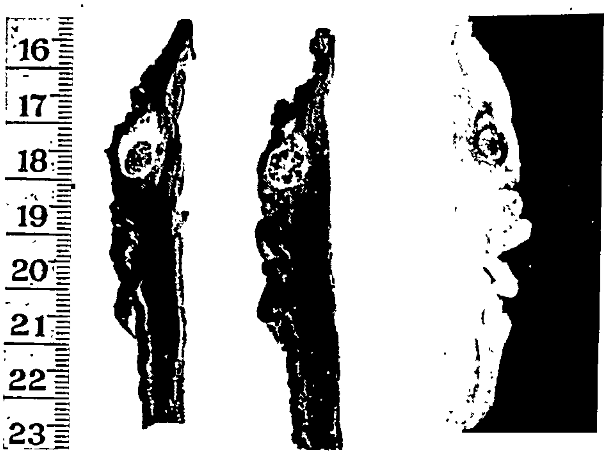


Fig. 3.—Macroscopic view of gallstones in wall of prepyloric region.

0.5 per cent) was used. The abdomen was opened in the midline above the umbilicus, revealing a severely dilated stomach. On the anterior surface of the pyloris white scar tissue (superficial) was observed. The fundus of the gallbladder was thickened and contained five gallstones. By means of the scalpel, it was separated from the stomach rather easily, neither the stomach nor the gallbladder being opened. A cholecystectomy was performed in anterograde fashion. Because of the superficial scar tissue in the pyloric region and the lesion due to adherence of the gallbladder to the prepyloric region, two-thirds of the stomach was resected, and a retrocolic and isoperistaltic (oralis inferior) anastomosis of the Finsterer type was carried out. A drainage tube was left in the bed of the gallbladder, and the abdomen was closed in three layers.

The postoperative course was uneventful. The skin sutures were removed on the eighth day, and by gradual shortening the drainage tube was removed on the 10th. Because of general weakness the patient was given a special diet and a medical regime and was discharged on Sept. 17, 1947, in good condition. Her weight was 47 Kg., which represented a gain of 15 Kg. since the operation.

Anatomopathologic Picture.—The gallbladder contained five gallstones. Its walls were thickened, showing scars in several areas and evidences of chronic inflammation. In the region of the fundus was an especially thick scar with fibrous infiltration.

A portion of the stomach 6 by 15 cm. was examined. In the pyloric region the walls were greatly thickened. A section from this area revealed three pea-sized yellow stones, mulberry-like in formation. These were easily removed from their sites in the gastric wall, and an opening was left in their place.

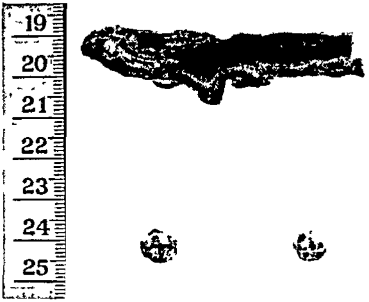


Fig. 4.—Hypertrophic stomach wall and gallstones, showing proportionate size.

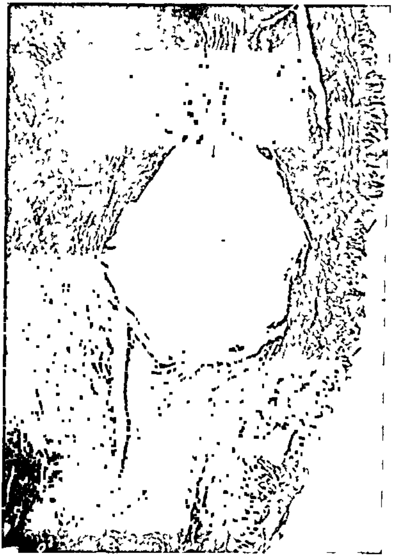


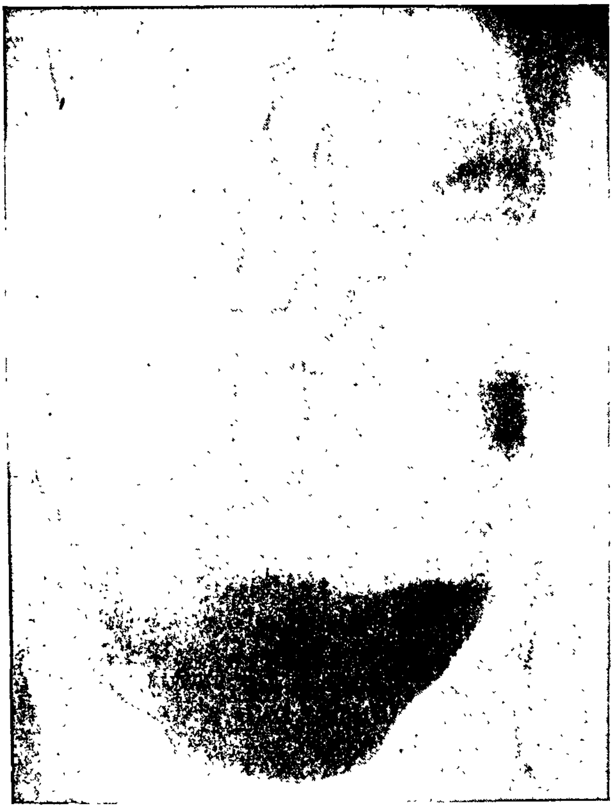
Fig. 5.—Low power photomicrograph showing gallstone lodged in stomach wall.

Chemical Analysis of Stones.—The stones on analysis contained cholesterin, 80 per cent; bilirubin, 8.5 per cent; calcium salts, 1.5 per cent, and water, 10 per cent.

Histologic Examination of Gastric Wall.—The submucosa revealed small cavities. In some areas these were covered with mucosa-like epithelium; in others with granulation tissue rich in plasmocytes, lymphocytes and capillaries. These openings extended as far as the epithelium of the mucosa and were located between the muscular layer and the mucosa of the stomach.

COMMENT

The characteristics of the case presented are:



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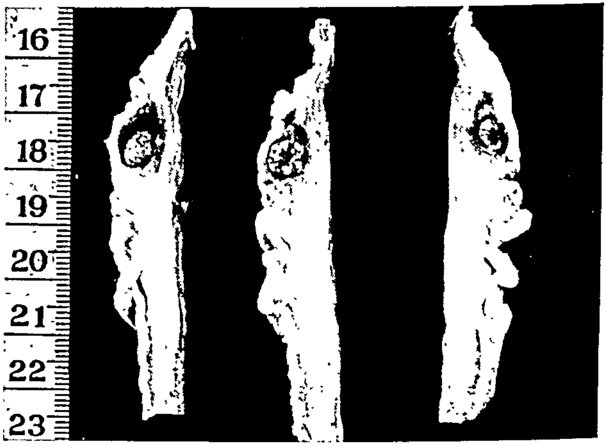

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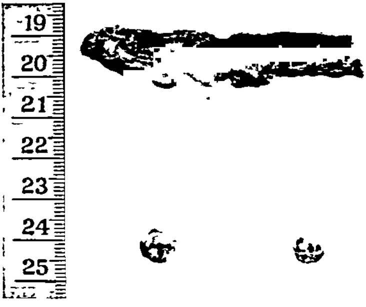

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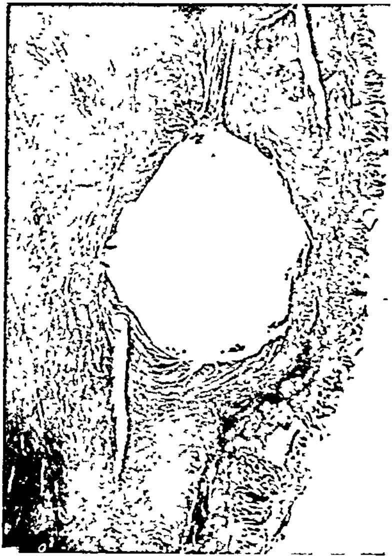

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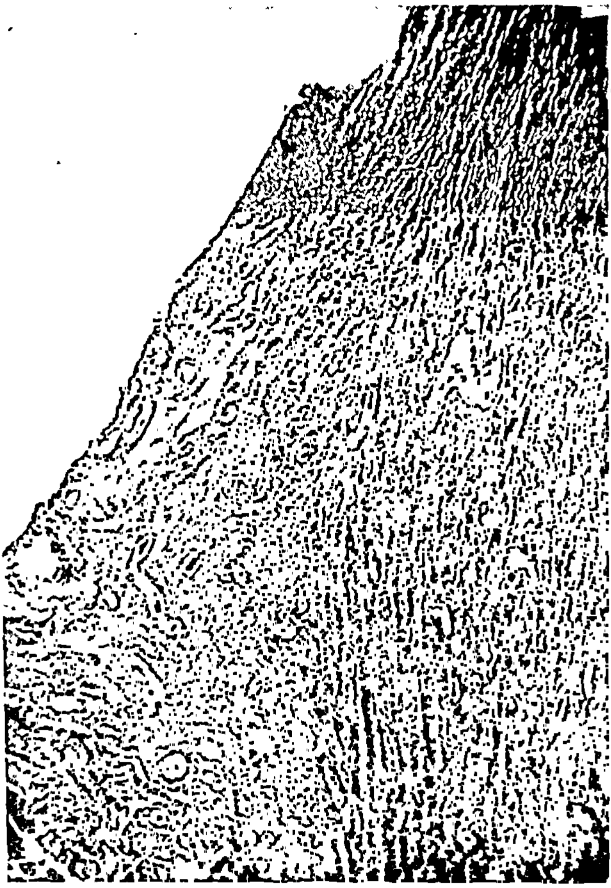

Fig. 6.—Higher power microscopic view of area shown in Figure 5. The muscle fibers are conspicuous.

1. The gallstones were lodged discretely, like diamonds, in the wall of the stomach.
2. The fistula that permitted migration of these stones from the gallbladder to the stomach wall had completely disappeared.
3. The gallstones, being located in the pyloric region, caused symptoms of pyloric stenosis, and the result of the stenosis could be seen.

The two cases recorded in the literature are somewhat similar. In the case reported by Makkas in 1930, the gallstones were located in the duodenal submucosa in a ringlike manner closing the duodenal lumen. Makkas was unable to trace any of the fistula. His case was the first of its kind to be reported.

W. Siemens, 1932, reported a similar case. Finding a gallstone in the duodenum, he could not trace any communicating passage between that organ and the gallbladder or its principal biliary passages.

In these two cases the gallstones were seen in the duodenal wall, which indicates that bile at some time entered the duodenum through a biliary passage. This however is quite common. In my own case, on the other hand, the gallstones were found in the prepyloric region of the stomach. The mucosa of the region was intact, and the stones were lodged in isolated cavities partially covered with epithelium. Their connection with the gallbladder had completely disappeared, and no sign of the fistula was found. It is my opinion that during the cholecystic episode the fundal portion of the gallbladder adhered to the stomach and that a fistula was formed as a result of inflammation and necrosis. Three of the gallstones then moved into the gastric wall as far as the submucosa. Later, when the inflammation subsided, the fistula closed spontaneously and completely, only a superficial adherence between the bladder and stomach being left.

SUMMARY

A case is reported in which migratory gallstones were found embedded discretely in the walls of the stomach, producing classic symptoms of pyloric stenosis. The case is unusual in that the stones occupied the gastric walls rather than the lumen of the stomach. Operation was performed with entirely successful results.

RÉSUMÉ

Un cas est rapporté de calculs biliaires qui migrèrent et se logèrent discrètement dans la paroi estomacale produisant les symptômes classiques de nature pylorique. Le cas est rare que les calculs se logent dans la paroi gastrique plutôt que dans la lumière de l'estomac. L'opération donna des résultats satisfaisants.

ZUSAMMENFASSUNG

Es wird ein Fall beschrieben, in dem

wandernde Gallensteine beobachtet wurden, die sich deutlich in den Magenwaenden eingebettet hatten und das klassische Bild einer Pylorusstenose hervorriefen Der Fall ist insofern ungewoehnlich, als die Steine sich in der Magenwand selbst und nicht in der Hoehle des Organs befanden Es wurde eine Operation mit vollem Erfolg ausgefuehrt

SUMÁRIO

Um caso de calculos biliares migratorios encastoados discretamente nas parêdes do estomago e relatado, no qual se observaram os classicos sintomas de estenose pilorica Mais digno de menção foi o fato de que as pedras ocupavam as parêdes do estomago em vez de se encontrarem na luz do estomago

A intervenção cirurgica foi executada com resultado inteiramente satisfatorio

RIASSUNTO

Descrive un caso in quale calcoli biliari emigranti furono osservati incastrati discretamente nella muraglia dello stomaco producendo sintomi classici delpiloro stenosato Il caso e' straordinario cio' che i calcoli occupavano i muri gastrici piuttosto che il cavo dello stomaco L'operazione diede risultati con successo

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Perforation of the Gallbladder

JOSEPH P. CANGELOSI, M.D., A.I.C.S., ANGELO L. VINCENTI, M.D.,
A.I.C.S., AND EDWARD KALVELAGE, M.D., F.I.C.S.
CHICAGO

THE incidence of acute perforation of the gallbladder is higher than has generally been believed, being often unrecognized and undiagnosed until necropsy. Johnstone and Ostendorph[1] reviewed 12,000 consecutive autopsies and noted 32 instances of perforation of the gallbladder as a cause of death—a ratio of 1 to 375. Cowley and Harkins[2] reported an average incidence of 13 per cent in a collected series of 2,261 cases of acute cholecystitis. Others[3] have shown that perforation occurs in 13.4 to 22 per cent of cases unless immediate surgical measures are employed.

Sanders[4] found that the incidence of perforations is higher in men than in women. Although others have substantiated his observations, no explanation has been offered for this peculiar circumstance.

The majority of perforations are associated with stones and a history of longstanding disease of the gallbladder. In Sanders' series[4] perforation of the gallbladder due to calculi was observed in 42 of 46 cases (91 per cent). McGuigan[5] made a study of 82 cases of perforated gallbladder and found calculi in two-thirds of the patients. However, a search for stones was omitted in some cases owing to the condition of the patient.

The mortality rate for acute perforation has varied from 22.7 per cent[6] to 45 per cent.[7] Gosset and his associates[8] analyzed the cases of 111 patients with perforation of the gallbladder into the peritoneal cavity, all operatively treated, with a mortality of over 52 per cent. The mortality rate varies according to the time that elapses after perforation and before surgical intervention.[9]

Perforation of the gallbladder is graver than perforation of a gastric or duodenal ulcer, because the clinical picture is less well known and less often diagnosed. Statistics from other writers show that perforation is far commoner after than before the fifth decade of life. Mailer's[10] explanation — that the gallbladders of older persons are less distensible and less vascular because of varying degrees of arteriosclerosis—seems plausible. This, in his opinion, encourages circulatory disturbances and gangrene. We have shown[11] that intestinal obstruction due to gallstone is a surgical emergency. Blain and Harkins[12] noted that intestinal obstruction was present in about 25 per cent of cases of gallbladder perforations.

Perforation of the gallbladder does not present the dramatic picture associated with other causes of visceral leakage; hence the treacherous and unyielding onset of general peritonitis is easily overlooked and accounts for a very high mortality.

It is generally conceded that early operation is indicated in all cases of acute cholecystitis. The correction of physiologic disorders before any surgical procedure is contemplated is very important. This has been outlined aptly by Walters and Snell.[13]

The following case is reported because it presents a differential diagnostic problem in an elderly patient with right hemiplegia.

REPORT OF CASE

Mr. F.C., an Italian-born white man aged 68, weighing 180 pounds (81.6 Kg.), was admitted to St. Elizabeth hospital on Sept. 6, 1948.

For three days prior to admittance he had complained of slight epigastric discomfort with eructation. An enema and sodium bicarbonate afforded no relief. On admission to the hospital his temperature was 101 F.; the pulse rate was 88 and the respiratory rate 24.

From the Surgical Service, St. Elizabeth Hospital, Chicago, Ill.

Submitted for publication March 30, 1949.

There were severe chills and marked abdominal pain

The family history was inconsequential, and the medical and surgical history was essentially noncontributory However, in 1943 the patient suffered a 'stroke", since which right-sided paralysis had produced a semi-invalid state There was partial aphasia, with incoherence of speech Further information obtained from the family produced no history of abdominal distress or food dyscrasia The patient drank coffee moderately, enjoyed all foods and slept well

Physical examination revealed him to be well developed but acutely ill The skin was normal in color, though somewhat clammy, and the face was flushed The temperature was 101 F , the pulse rate 100 and the respiratory rate 28 The pupils were equal and reacted to light and accommodation Neither the sclere nor the conjunctivae were injected or jaundiced The ears, nose and throat were essentially normal The right half of the mouth drooped The tongue, when protruded, deviated to the right side

The chest presented fine moist rales in both lower lung bases There were diminished lung excursions but no apparent dullness was noted Respirations were somewhat rapid and slightly labored

The cardiac borders were exaggerated to the right and left, with the apex beat in the fifth interspace There was a hard, somewhat harsh blowing systolic murmur, elicited best at the apex The rhythm was regular The blood pressure in millimeters of mercury was 130 systolic and 80 diastolic

The abdomen was only slightly distended There was pain over the entire right side of the abdomen, this was more severe in the right upper quadrant There was some rigidity over the right upper quadrant which seemed to extend downward toward the McBurney region There was moderate borborygmus The liver, kidney and spleen were not palpable No scar or hernia was present The legs showed no varicosities and no edema

Neurologically the patient presented spastic hemiplegia of the right side The right upper extremity assumed a posture of adduction, the forearm was flexed, and the hand pronated in flexion The musculature of the right lower extremity appeared contracted, with the foot assuming the equinovarus position The superficial and deep reflexes were exaggerated on the right side, with absence of the abdominal and cremasteric reflexes, wrist, patellar and ankle clonus were present

The erythrocyte count was 4,470,000 per cubic millimeter of blood, the leukocyte count, 14,750, with 88 per cent polymorphonuclears The value for hemoglobin was 85 8 per cent

The urine was clear and amber, with an acid reaction The specific gravity was 1,024 The value for albumin was 750 mg The test for sugar gave a negative result There were occasional red blood cells with fine and coarse granular casts The blood type was II, Rh positive, and the Wassermann reaction was negative

A warm soapsuds enema gave good results, the solution returned, moderately colored with a large amount of light brown stool

A primary diagnosis of mesenteric thrombosis was considered, based upon the history, and conservative management was deemed wise at this time The patient was given 2,000 cc of 5 per cent dextrose with 500 mg of ascorbic acid and one ampule of Solu B intravenously and 300,000 units of duracillin intragluteally

On September 7, the second hospital day, the temperature had risen to 103 F , the pulse rate was 108 and the respiratory rate 50, the beat was rapid and shallow, with profuse diaphoresis Roentgen examination of the chest showed a widened arteriosclerotic aorta with prominence of the left ventricle There was some congestion in the base of the right lung A flat film of the abdomen showed numerous abnormally distended loops of small bowel, indicating moderately advanced ileus The leukocyte count was now 20,500 per cubic millimeter of blood A Wangensteen decompression was started, and the patient was taken to the operating room for exploratory laparotomy

One per cent sodium pentothal was administered, supplemented with cyclopropane oxygen, and the abdomen was opened through a right rectus incision Three cc of d tubocurarine chloride was administered intravenously for additional relaxation after the skin was incised

The peritoneal cavity contained about 100 cc of dark, purulent fluid Fibrinous peritonitis was present along the right lesser peritoneal cavity The cecum and ascending colon adhered to the lateral peritoneal wall and the appendix and mesoappendix were swollen, discolored (greyish red), and covered with a loosely adherent, thick, soft, grey-

Perforation of the Gallbladder

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THE incidence of acute perforation of the gallbladder is higher than has generally been believed, being often unrecognized and undiagnosed until necropsy. Johnstone and Ostendorph[1] reviewed 12,000 consecutive autopsies and noted 32 instances of perforation of the gallbladder as a cause of death—a ratio of 1 to 375. Cowley and Harkins[2] reported an average incidence of 13 per cent in a collected series of 2,261 cases of acute cholecystitis. Others[3] have shown that perforation occurs in 13.4 to 22 per cent of cases unless immediate surgical measures are employed.

Sanders[4] found that the incidence of perforations is higher in men than in women. Although others have substantiated his observations, no explanation has been offered for this peculiar circumstance.

The majority of perforations are associated with stones and a history of longstanding disease of the gallbladder. In Sanders' series[4] perforation of the gallbladder due to calculi was observed in 42 of 46 cases (91 per cent). McGuigan[5] made a study of 82 cases of perforated gallbladder and found calculi in two-thirds of the patients. However, a search for stones was omitted in some cases owing to the condition of the patient.

The mortality rate for acute perforation has varied from 22.7 per cent[6] to 45 per cent.[7] Gosset and his associates[8] analyzed the cases of 111 patients with perforation of the gallbladder into the peritoneal cavity, all operatively treated, with a mortality of over 52 per cent. The mortality rate varies according to the time that elapses after perforation and before surgical intervention.[9]

Perforation of the gallbladder is graver than perforation of a gastric or duodenal ulcer, because the clinical picture is less well known and less often diagnosed. Statistics from other writers show that perforation is far commoner after than before the fifth decade of life. Mailer's[10] explanation — that the gallbladders of older persons are less distensible and less vascular because of varying degrees of arteriosclerosis—seems plausible. This, in his opinion, encourages circulatory disturbances and gangrene. We have shown[11] that intestinal obstruction due to gallstone is a surgical emergency. Blain and Harkins[12] noted that intestinal obstruction was present in about 25 per cent of cases of gallbladder perforations.

Perforation of the gallbladder does not present the dramatic picture associated with other causes of visceral leakage; hence the treacherous and unyielding onset of general peritonitis is easily overlooked and accounts for a very high mortality.

It is generally conceded that early operation is indicated in all cases of acute cholecystitis. The correction of physiologic disorders before any surgical procedure is contemplated is very important. This has been outlined aptly by Walters and Snell.[13]

The following case is reported because it presents a differential diagnostic problem in an elderly patient with right hemiplegia.

REPORT OF CASE

Mr. F.C., an Italian-born white man aged 68, weighing 180 pounds (81.6 Kg.), was admitted to St. Elizabeth hospital on Sept. 6, 1948.

For three days prior to admittance he had complained of slight epigastric discomfort with eructation. An enema and sodium bicarbonate afforded no relief. On admission to the hospital his temperature was 101 F.; the pulse rate was 88 and the respiratory rate 24.

From the Surgical Service, St. Elizabeth Hospital, Chicago, Ill.

Submitted for publication March 30, 1949.

There were severe chills and marked abdominal pain

The family history was inconsequential, and the medical and surgical history was essentially noncontributory However, in 1943 the patient suffered a "stroke", since which right-sided paralysis had produced a semi invalid state There was partial aphasia, with incoherence of speech Further information obtained from the family produced no history of abdominal distress or food dyscrasia The patient drank coffee moderately, enjoyed all foods and slept well

Physical examination revealed him to be well developed but acutely ill The skin was normal in color, though somewhat clammy, and the face was flushed The temperature was 101 F, the pulse rate 100 and the respiratory rate 28 The pupils were equal and reacted to light and accommodation Neither the sclere nor the conjunctivae were injected or jaundiced The ears, nose and throat were essentially normal The right half of the mouth drooped The tongue, when protruded, deviated to the right side

The chest presented fine moist rales in both lower lung bases There were diminished lung excursions but no apparent dullness was noted Respirations were somewhat rapid and slightly labored

The cardiac borders were exaggerated to the right and left, with the apex beat in the fifth interspace There was a hard, somewhat harsh blowing systolic murmur, elicited best at the apex The rhythm was regular The blood pressure in millimeters of mercury was 130 systolic and 80 diastolic

The abdomen was only slightly distended There was pain over the entire right side of the abdomen, this was more severe in the right upper quadrant There was some rigidity over the right upper quadrant which seemed to extend downward toward the McBurney region There was moderate borborygmus The liver, kidney and spleen were not palpable No scar or hernia was present The legs showed no varicosities and no edema

Neurologically the patient presented spastic hemiplegia of the right side The right upper extremity assumed a posture of adduction, the forearm was flexed, and the hand pronated in flexion The musculature of the right lower extremity appeared contracted, with the foot assuming the equinovarus position The superficial and deep reflexes were exaggerated on the right side, with absence of the abdominal and cremasteric reflexes, wrist, patellar and ankle clonus were present

The erythrocyte count was 4,470,000 per cubic millimeter of blood, the leukocyte count, 14,750, with 88 per cent polymorphonuclears The value for hemoglobin was 85 8 per cent

The urine was clear and amber, with an acid reaction The specific gravity was 1,024 The value for albumin was 750 mg The test for sugar gave a negative result There were occasional red blood cells with fine and coarse granular casts The blood type was II, Rh positive, and the Wasserman reaction was negative

A warm soapsuds enema gave good results, the solution returned, moderately colored with a large amount of light brown stool

A primary diagnosis of mesenteric thrombosis was considered, based upon the history, and conservative management was deemed wise at this time The patient was given 2,000 cc of 5 per cent dextrose with 500 mg of ascorbic acid and one ampule of Solu-B intravenously and 300,000 units of duracillin intragluteally

On September 7, the second hospital day, the temperature had risen to 103 F, the pulse rate was 108 and the respiratory rate 50, the beat was rapid and shallow, with profuse diaphoresis Roentgen examination of the chest showed a widened arteriosclerotic aorta with prominence of the left ventricle There was some congestion in the base of the right lung A flat film of the abdomen showed numerous abnormally distended loops of small bowel, indicating moderately advanced ileus The leukocyte count was now 20,500 per cubic millimeter of blood A Wangensteen decompression was started, and the patient was taken to the operating room for exploratory laparotomy

One per cent sodium pentothal was administered, supplemented with cyclopropane-oxygen and the abdomen was opened through a right rectus incision Three cc of d-tubocurarine chloride was administered intravenously for additional relaxation after the skin was incised

The peritoneal cavity contained about [illegible] cc of dark, purulent fluid Fibrinous peritonitis was present along the right [illegible] peritoneal cavity The cecum and [illegible] colon adhered to the lateral per[illegible] and the appendix and meso[illegible] swollen discolored (greyish [illegible] ered with a loosely adhe[illegible]

Gallenblasendurchbruchs macht diese Erkrankung zu einem chirurgischen Notzustand.

RÉSUMÉ

1. La perforation de la vésicule biliaire est plus fréquente qu'on ne le croit.

2. Souvent confondue avec d'autres lésions aigues de l'abdomen, le diagnostic pré-opératoire de cette lésion est rarement fait.

3. Il n'y a pas de symptômes pathognomoniques de la perforation de la vésicule biliaire.

4. Chez les patients agés où habituellement ontend à patienter s'ils sont en crise aigue et où l'anxiété est grave, on doit pratiquer une exploration par la laparatomie.

5. Une vésicule biliaire à syndrôme aigu menace la vie du patient.

6. La cholécystectomie préventive, surtout s'il y a calculs, diminue les chances de perforation et conséquemment de mortalité.

7. Il faut balancer adéquatement la diète chez les patients souffrant d'iléus paralytique, une hydration abondante, des protéines et des vitamines doivent être données par voie parentérale.

8. Le taux de mortalité élevé des cas de perforation de la vésicule en fait une urgence chirurgicale.

RESUMEN Y CONCLUSIONES

1. La perforación aguda del colecisto es más común de lo que generalmente se cree.

2. Su diagnóstico preoperatorio es raro por confundirse con otros estados abdominales agudos.

3. No hay síntomas patognomónicos de perforación del colecisto.

4. La enfermedad aguda del colecisto es una amenaza potencial para la vida.

5. Se impone laparotemía exploradora en el paciente de edad madura, en quien el tratamiento expectante ordinario de la colecistitis aguda produce ansiedad continua.

6. La colecistectomía profiláctica en casos con litiasis evidente reduce la incidencia de perforación y por ende el índice de mortalidad.

7. El equilibrio adecuado de la nutrición se asocia necesariamente en el tratamiento del íleo paralítico, especialmente en los ancianos. Debe mantenerse parenteralmente la hidratación debida y el equilibrio proteínico y vitamínico.

8. La alta mortalidad de la perforación del colecisto hace este tipo de enfermedad una emergencia quirúrgica.

RIASSUNTO E CONCLUSIONI

1. Perforazione acuto della cistifellea e' piu comune che sia generalmente creduto.

2. A caglion che esiste confusione con alte condizioni addominale, e' raremente fatto la diagnosi preoperatoria.

3. Non vi sono sintomi pàtognomonico della perforazione della cistifellea.

4. Malattia acuta della cistifellea e' in virtualita' minaccioso alla vita.

5. Per il paziente anziano nel quale trattamento aspettante per colecistite acuta da' luoga di ansieta' continuo, si avanza laparotomia esploratore.

6. Colecistectomia profilattica nei casi che dimostrano calcoli abbassa l'incidenza di perforazione, per cio' minacciante la tassa di mortalita'.

7. Nutrizione inbilancia sufficiente e' un aggiunto necessario nel trattamento di ileo paralitico, specialmente nel vecchio. Idrazione abbondante, aquilibrio di proteine e vitamine deve essere sostenuto parenteralmente.

8. La mortalita' alta di perforazione di cistifellea rende questo tipo di malattia un avvenimento chirurgico.

SUMÁRIO

1) A perfuração agúda da vesícula biliar é mais comun do que geralmente se acredita.

2) Devido à sua confusão com outras condições abdominais agúdas ela é raramente diagnosticada pre-operatoriamente.

3) Náo ha siǹtomas patognomônicos de

yellow membrane. An appendectomy was performed, with use of No. 0 chromic catgut. The stump was not inverted. Exploration of the biliary region was deemed wise and was well rewarded. Here we encountered a large walled-off mass which yielded several pea-sized calculi lying free in the abdominal cavity. The incision was extended upward and revealed a ragged perforation of the gallbladder on the inferior surface of Hartmann's pouch. The mucosa was dark and discolored, friable, ulcerated and partially desquamated.

The gallbladder was opened freely at its fundus, and all calculi were removed. A cholecystostomy was performed. A Penrose drainage tube was placed in Morison's pouch and another in Douglas' pouch. Sulfathiazole crystals were powdered throughout the peritoneal cavity, and the abdomen was closed in layers.

For three days the patient remained critically ill but improvement gradually took place. Prostigmine (1:2,000) was given every three hours for two days and then three times daily for two days. Duracillin (300,000 units) was given twice daily for ten days. Two transfusions of whole blood (250 cc. each), were given; the patient was encouraged to turn from side to side frequently; intranasal oxygen was given at intervals when breathing became difficult; 2,000 cc. of 5 per cent dextrose with 500 mg. of ascorbic acid and one ampule of Solu-B was given intravenously daily for three days. This was supplemented with vitamin K three times daily for twelve days.

After the fourth day the patient showed signs of improvement and the Wangensteen procedure was gradually discontinued. The tubes in Morison's and Douglas' pouch were removed on the eighth day. Bile drained for thirteen days. The tube in the gallbladder was then removed, and the patient was discharged in good condition after twenty-three days in the hospital.

SUMMARY AND CONCLUSIONS

1. Acute perforation of the gallbladder is more common than is generally believed.
2. Because of its confusion with other acute abdominal conditions, it is rarely diagnosed preoperatively.
3. There are no symptoms pathognomonic of perforation of the gallbladder.
4. Acute disease of the gallbladder is potentially a life-threatening condition.
5. For the elderly patient to whom the ordinary expectant treatment of acute cholecystitis causes continued anxiety, exploratory laparotomy is urged.
6. Prophylactic cholecystectomy in cases in which calculi have been visualized reduces the incidence of perforation, thereby lowering the mortality rate.
7. Adequate nutritional balance is a necessary adjunct in treatment of paralytic ileus, especially in the aged. Full hydration, protein and vitamin balance must be kept up parenterally.
8. The high mortality of gallbladder perforation makes this. type of disease a surgical emergency.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

1. Die akute Perforation der Gallenblase tritt haeufiger auf, als man allgemein glaubt.
2. Die Erkrankung wird selten vor der Operation erkannt, weil sie mit anderen akuten Baucherkrankungen verwechselt wird.
3. Die Perforation der Gallenblase hat keine pathognomonischen Krankheitszeichen aufzuweisen.
4. Akute Gallenblasenerkrankungen sind potentiell lebensbedrohende Zustaende.
5. Fuer aeltere Kranke, denen die uebliche abwartende Behandlung einer akuten Gallenblasenentzuendung dauernde Angst und Beunruhigung einfloesst, wird die Probelaparotomie dringend angeraten.
6. Durch prophylaktische Resektion der Gallen blase in Faellen, bei denen Steine nachgewiesen werden konnten, wird die Haeufigkeit von Perforationen und damit die Sterblichkeitsziffer herabgesetzt.
7. Ausreichende Nahrungszufuhr ist ein wesentlicher Faktor in der Behandlung der Darmlaehmung, besonders bei aelteren Kranken. Die Bilanz von Fluessigkeit, Eiweiss und Vitaminen muss auf parenteralem Wege aufrechterhalten werden.
8. Die hohe Sterblichkeitsziffer des

Gallenblasendurchbruchs macht diese Erkrankung zu einem chirurgischen Notzustand.

RÉSUMÉ

1. La perforation de la vésicule biliaire est plus fréquente qu'on ne le croit.

2. Souvent confondue avec d'autres lésions aigues de l'abdomen, le diagnostic pré-opératoire de cette lésion est rarement fait.

3. Il n'y a pas de symptômes pathognomoniques de la perforation de la vésicule biliaire.

4. Chez les patients agés où habituellement ontend à patienter s'ils sont en crise aigue et où l'anxiété est grave, on doit pratiquer une exploration par la laparatomie.

5. Une vésicule biliaire à syndrôme aigu menace la vie du patient.

6. La cholécystectomie préventive, surtout s'il y a calculs, diminue les chances de perforation et conséquemment de mortalité.

7. Il faut balancer adéquatement la diète chez les patients souffrant d'iléus paralytique, une hydration abondante, des protéines et des vitamines doivent être données par voie parentérale.

8. Le taux de mortalité élevé des cas de perforation de la vésicule en fait une urgence chirurgicale.

RESUMEN Y CONCLUSIONES

1. La perforación aguda del colecisto es más común de lo que generalmente se cree.

2. Su diagnóstico preoperatorio es raro por confundirse con otros estados abdominales agudos.

3. No hay síntomas patognomónicos de perforación del colecisto.

4. La enfermedad aguda del colecisto es una amenaza potencial para la vida.

5. Se impone laparotemía exploradora en el paciente de edad madura, en quien el tratamiento expectante ordinario de la colecistitis aguda produce ansiedad continua.

6. La colecistectomía profiláctica en casos con litiasis evidente reduce la incidencia de perforación y por ende el índice de mortalidad.

7. El equilibrio adecuado de la nutrición se asocia necesariamente en el tratamiento del íleo paralítico, especialmente en los ancianos. Debe mantenerse parenteralmente la hidratación debida y el equilibrio proteínico y vitamínico.

8. La alta mortalidad de la perforación del colecisto hace este tipo de enfermedad una emergencia quirúrgica.

RIASSUNTO E CONCLUSIONI

1. Perforazione acuto della cistifellea e' piu comune che sia generalmente creduto.

2. A caglion che esiste confusione con alte condizioni addominale, e' raremente fatto la diagnosi preoperatoria.

3. Non vi sono sintomi pàtognomonico della perforazione della cistifellea.

4. Malattia acuta della cistifellea e' in virtualita' minaccioso alla vita.

5. Per il paziente anziano nel quale trattamento aspettante per colecistite acuta da' luoga di ansieta' continuo, si avanza laparotomia esploratore.

6. Colecistectomia profilattica nei casi che dimostrano calcoli abbassa l'incidenza di perforazione, per cio' minacciante la tassa di mortalita'.

7. Nutrizione inbilancia sufficiente e' un aggiunto necessario nel trattamento di ileo paralitico, specialmente nel vecchio. Idrazione abbondante, aquilibrio di proteine e vitamine deve essere sostenuto parenteralmente.

8. La mortalita' alta di perforazione di cistifellea rende questo tipo di malattia un avvenimento chirurgico.

SUMÁRIO

1) A perfuração agúda da vesícula biliar é mais comun do que geralmente se acredita.

2) Devido à sua confusão com outras condições abdominais agúdas ela é raramente diagnosticada pre-operatoriamente.

3) Náo ha sintomas patognomônicos de

perfuração da vesícula biliar.

4) Uma doença aguda da vesícula biliar é potencialmente uma condição de perigo para a vida do paciente.

5) Nos pacientes idósos em que os tratamentos expectantes usuais de colecistite aguda causam contínua ansiedade a laparotomia exploradôra se impõe.

6) A colecistectomia profilática nos casos em que os cálculos foram visualizados redúz a incidencia de perfuração, de onde se segue a redução do índice de mortalidade.

7) O equilíbrio nutricional adequado é corolário imprescindivel no tratamento do ileo paralítico, especialmente em pacientes idosos. Compléta hidratação tanto quanto equilibrio proteico e vitamínico devem ser mantidos por via parenteral.

8) A alta mortalidade de perfuração da vesícula biliar confére a esta doença o carater de enfermidade cirúrgica de urgencia.

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The Eighth International Assembly
of the
International College of Surgeons
will be held in
Madrid, Spain
May 20-24, 1952

Editorials

Iodine as a Skin Antiseptic Prior to Abdominal Operations

BERNARD J. FICARRA, M.D., F.I.C.S.*
BROOKLYN

ALTHOUGH iodine has been used for over a century by the medical profession, it has not always been first choice as an antiseptic for the skin. Nevertheless, in spite of any temporary loss of popularity, iodine remains one of the finest antiseptics available.

A study was made in which two different aqueous iodine solutions were employed interchangeably in 100 consecutive patients prior to abdominal surgery. The preparations were idodine solution N.F. IX and iodine-propylene glycol solution, with the following formulas:

Iodine Solution N.F. IX

Iodine	20 Gm.
Sodium Iodide	24 Gm.
Distilled Water q.s.	1,000 cc.

Solution Iodine-Propylene Glycol

Iodine	20 Gm.
Sodium Iodide	24 Gm.
Propylene Glycol	250 cc.
Distilled Water q.s.	1,000 cc.

In accordance with tradition, soap and water were employed to cleanse the skin, and this was followed by application of the chemical antiseptic. After the iodine solution had been applied, the excess moisture was removed with a dry sponge, leaving a uniform iodine stain on the skin. After the operation iodine solution was applied to the wound site and excess moisture removed. The same procedure was followed at each dressing.

In this series, which comprised 100 consecutive operative cases, no postoperative wound infections and no untoward reactions (such as cutaneous burns) followed the use of these two aqueous iodine solutions.

The aforementioned solutions fulfill the requirements of an ideal skin antiseptic or sterilizing agent as postulated by others.[1] These requirements are: (1) it must kill bacteria in a reasonably short time; (2) it must not be neutralized by contact with small amounts of serum, fats, soaps or oils; (3) its effect should last at least throughout the operation; (4) it must not be irritating to the skin, and (5) it should be colored to show where it has been applied.

An antiseptic which possesses these attributes and in addition is reasonably cheap should be considered an ideal preoperative skin-cleansing agent. Aqueous iodine fulfills these requisites and is cheap enough to appeal to the most zealous advocate of economy.

Many authors have proved the value of iodine as an antiseptic.[2] Experience based on more than 100 consecutive abdominal operations substantiates the efficacy of iodine as an antiseptic.

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Summing Up the Summaries

IN A recent issue of *Science* there appeared a letter from a reader who mildly reproached another reader for complaining that certain journals published abroad carry no summaries in English. "It strikes me," he says, in substance, "that Mr. — is on thin ice when he rebukes these journals for chauvinism because they publish only in their mother tongues. What American journal condescends to print foreign résumés? None!"

One must admire this contributor's sense of justice, but his habits of observation have failed him here. The *Journal of the International College of Surgeons*, from its very inception, has made it a matter of policy to publish summaries in several languages besides English. Each article now carries, in addition to its English summary, a résumé in French, German, Spanish, Italian and Portuguese. Pending the invention of an international language that shall satisfy everybody (should everybody live so long), we find this the best possible means of making our material universally available.

Since all of our summaries are translated directly from the authors' English versions, they vary in length and detail. Even the shortest of them, however, tells the reader clearly what the subject is, what conclusions have been drawn and whether the material is apposite to his field of work. This, together with good illustrations and tables, supplies him with valuable data and current comment even though he does not read a word of English. He is saved much time in selecting the articles he wishes to explore by translation.

But there is more than a utilitarian value here. The *Journal* is the official publication of an organization dedicated to the free exchange of scientific knowledge without regard to national boundaries; some such arrangement is therefore mandatory, if only as a matter of courtesy and respect to our colleagues abroad. But even if this were an exclusively American publication we should not consider ourselves relieved of the obligation in the light of present world conditions. We cannot afford to close any avenue of communication nowadays. Since it is obviously impossible to publish whole articles in six different languages each month, we feel that the summaries represent the best practicable substitute. It will be a long time before a universal language is available, if indeed this ever comes to pass.

Since we are indebted to *Science's* correspondent for the topic of this editorial, we must not fail to admit here that in one respect he is absolutely right. "What American journal condescends to print foreign résumés? None!"

Not, most emphatically, the *Journal of the International College of Surgeons.* The publication of summaries in other languages is not a condescension, it is a privilege and a pleasure. Nobody with even slight knowledge of the crisp, inimitable suavity of the French language, the infinite emotional and intellectual variety of the German, the melodious beauty of the Spanish or the magnificent classical heritage of the Italian can possibly feel condescending toward these tongues. The same is true of every language spoken. Each is a fathomless mine of peculiar treasure, and the deeper the acquaintance the higher one's respect.

Meanwhile, it seems we are unique and didn't know it. What a wonderful thing to discover about oneself! It has quite made our day. Indeed, we remember, with a fond sense of kinship, a gentleman we met many years ago—that memorable character of Molière who, on being told the meaning of the word "prose", exclaimed with rapture that he had been speaking it all his life and never realized it!—M. T.

Chapter News

International College of Surgeons

United States Chapter

Arnold S. Jackson, M.D., F.A.C.S., F.I.C.S., Secretary

Chicago Assembly: Plans are well on the way to completion for the forthcoming Assembly in Chicago this year, September 10-13 inclusive, with headquarters at the Palmer House. The officers of the United States Chapter extend to all members of the medical and surgical professions of America and the world a cordial invitation to attend. An excellent clinical program has been arranged (see Page 121 et seq.), which will afford a comprehensive review of the latest concepts in surgery by world-renowned teachers.

Committees: The following Committees are responsible for the various departments of Assembly procedure:

Arrangements

Chairman of the Assembly
RAYMOND W. MCNEALY, M.D., F.A.C.S., F.I.C.S., Chicago
Co-Chairmen
KARL A. MEYER, M.D., F.A.C.S., F.I.C.S., Chicago
MAX THOREK, M.D., LL.D., D.Sc., F.I.C.S., F.B.C.S., Chicago

Banquet

CHESTER W. TROWBRIDGE, M.D., F.A.C.S., F.I.C.S., Chicago

Convocation

Chairmen
HARRY A. OBERHELMAN, M.D., F.A.C.S., F.I.C.S., Chicago
CLEMENT L. MARTIN, M.D., F.A.C.S., F.I.C.S., Chicago

ERNEST F. PURCELL, M.D., F.I.C.S., Trenton, New Jersey
FRANCIS D. WOLFE, M.D., F.A.C.S., F.I.C.S., Chicago
CLAIRE E. CARR, M.D., F.A.C.S., F.I.C.S., Chicago
HORACE F. TURNER, M.D., F.A.C.S., F.I.C.S., Chicago
LOUIS F. PLZAK, M.D., F.A.C.S., F.I.C.S., Berwyn, Illinois
WALTER C. BURKET, M.D., F.I.C.S., Evanston, Illinois

Motion Picture Program

PHILIP THOREK, M.D., F.A.C.S., F.I.C.S., Chicago

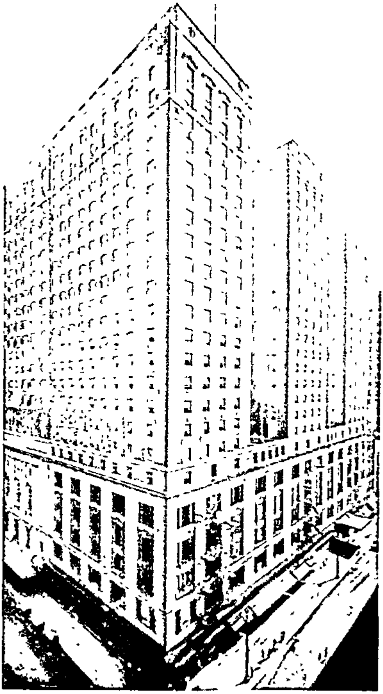
General Program

ARNOLD S. JACKSON, M.D., F.A.C.S., F.I.C.S., *Chairman*, Madison, Wisconsin

Motion Picture Program: Dr. Philip Thorek, in charge of the Motion Picture Program, announces that a program has been arranged which will appeal to surgeons and specialists alike.

Although technic is the point of greatest focus, emphasis is placed upon the newer type of film which presents the subject in its entirety.

The scope of the program includes the



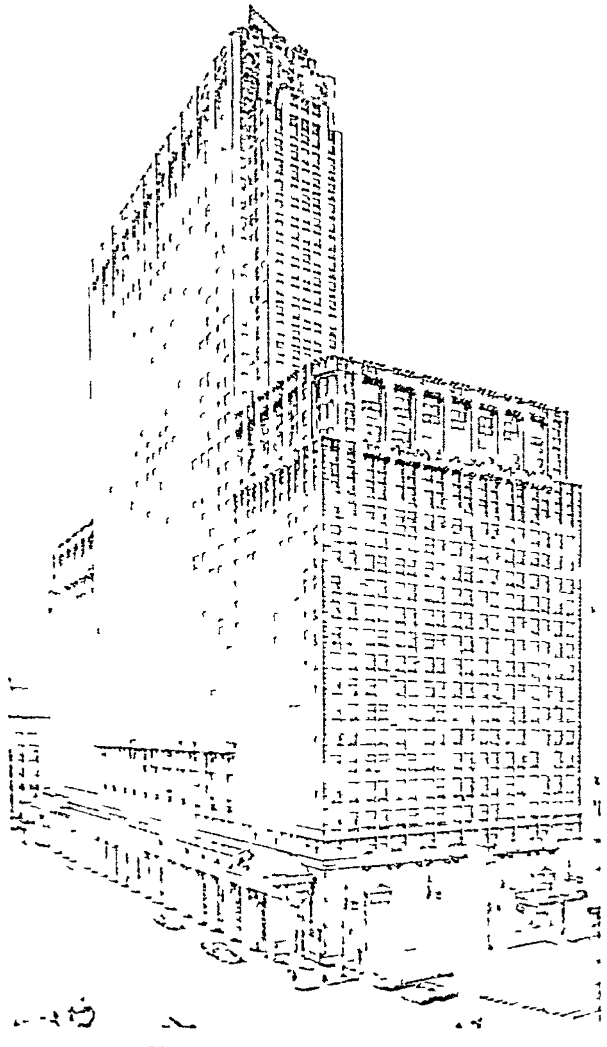
The P ago.

most recent surgical films pertaining to orthopedics, proctology, gynecology, the heart, the esophagointestinal tract, ophthalmology, the thorax, the nervous system, the biliary passages, the genitourinary system, the thyroid gland, the cardiovascular diseases, et cetera.

A Film Forum also is to be presented in which five surgical films will be shown, with the surgeon present to discuss his film.

The Preliminary Program appears in this issue, Page 129.

Banquet: The Annual Banquet will be held in the Grand Ballroom of the Palmer House at 7:30 p.m. on the evening of Wednesday, September 12. The banquet speaker will be Mr. A. Lawrence Abel of London, whose topic will be "What Is Happening in Britain—Fact and Fiction." Mr. Abel is a Fellow of the Royal College of Surgeons of England and a member of its Council; Senior Surgeon at the Princess Beatrice Hospital and the Gordon Hospital for Rectal and Gastroenterological Diseases; Surgeon to the Royal Cancer Hospital; President of the Metropolitan Counties Branch of the British Medical Association and Council Member of that organization; Honorary Fellow of the American Medical Association, the American Proctologic Society and the International College of Surgeons.



Chicago Civic Opera House.

Convocation: The Convocation ceremonies, with induction of new members of the United States Chapter of the College, will be held at the Civic Opera House on Thursday evening, September 13. The Honorable Estes Kefauver, United States Senator from Tennessee, will give the Convocation Address. His subject is "The America of Tomorrow."

Assembly Information: The following points are important:

Hotel Reservations: See inside front cover.

Registration, Sunday 2:00 p.m. through Thursday, 3:00 p.m., September 9-13, Palmer House, Chicago.

Advance registration (on Sunday) will save time.

Admission by badge only to all scientific Assemblies, section meetings, and to the exhibits. Present your I. C. of S. membership card to expedite registration. Registration fee, $5.00.

Bona fide doctors of medicine serving as residents and interns, if vouched for by written card or letter by the superintendent of their hospital or by an officer of the College, will be registered as guests. Please present credentials at Registration Desk.

Banquet—Grand Ballroom, Palmer House, Chicago, Wednesday, September 12.

Convocation—Thursday, September 13, Chicago. Civic Opera House. A colorful pageant symbolizing the international aspects of the College. Tickets available at Registration Desk for members of the International College of Surgeons, all registrants, their families and guests **(no admission fee).**

One hundred thirty-seven scientific and technical exhibits will open daily at 8:30 a.m. and close at 5:30 p.m. Frequent intermissions to view the exhibits have been arranged before, during and after the assemblies.

Motion picture programs, incorporating modern surgical technics will be presented in the Scientific Exhibit Hall by Davis & Geck, Inc., Brooklyn, N. Y. The films will show continuously on Monday, Tuesday, Wednesday, Thursday, September 10-13, from 10:00 a.m. to 4:30 p.m.

For copy of Final Program, write the Secretary, Dr. Arnold S. Jackson, F.A.C.S., F.I.C.S., 1516 Lake Shore Drive, Chicago, Ill.

Dr. Crotti Honored: Dr. André Crotti, F.A.C.S., F.I.C.S., distinguished goiter specialist and founder of the Columbus Cancer Clinic in Columbus, Ohio, was highly honored by his colleagues at a recent meeting of the American Goiter Society in Columbus. Dr. Crotti is a co-founder of this organization, which held its first meeting in Bloomington, Illinois, in 1923. During presentation of a scroll of honor and a ring to Dr. Crotti for his outstanding services in the field of goiter research, the assemblage of some 250 notables in the profession spontaneously accorded him a standing ovation lasting several minutes. The *Journal* adds its warmest congratulations and those of the College.

Turkish Chapter: The Turkish Chapter of the International College of Surgeons held its second quarterly meeting on May 12, 1951, in the auditorium of the First Surgical Clinic of the Djerrahpasha Hospital in Istanbul. Owing to the illness of the President, Dr. Burhaneddin Toker, the Vice-President, Dr. Feridun Sevket Evrensel, presided.

The following program was presented:

Results of Pericardiolysis in a Case of Adhesive Tuberculous Pericarditis, by Dr. Feridun Sevket Evrensel

Total Gastrectomy in Gastric Carcinoma, Prof. Dr. Fahri Arel and Dr. B. Goroon

Surgery of Hypertension, Dr. Feyyaz Berkay

Arteriography in Traumatic Arteriovenous Aneurysms (Presentation of cases) by Dr. Dervis Manizade

Excision and Primary Closure in Open Fractures (primary closure resulting from an intervention after 24 hours on an open fracture of leg) by Dr. Dervis Manizade.

Dr. Esnaurrizar Honored: Dr. Miguel Lopez Esnaurrizar, F. I. C. S., National Regent of the Mexican Chapter, International College of Surgeons, has been elected President of the Franco-Mexican Medical Association for the year 1951.

Argentina: The Argentine Society of Thoracic Surgery organize Four Argentine Days of Thoracic Surgery and the First Latin-American Days of Thoracic Surgery in Buenos Aires on July 2-7, 1951. The present Board of Directors of the Society is composed of distinguished members of the International College of Surgeons.

Brazil: A meeting of the Brazilian Chapter of the International College of Surgeons was held in São Paulo on May 30, 1951, at which time the following officers were elected for 1951 and 1952:

President, Dr. José Avelino Chaves
President-Elect, Dr. Oscar Cintra Gordinho
Vice-President, Prof. Dr. Rodolpho de Freitas
Secretary, Dr. Waldyr da Silva Prado
Assistant Secretary, Dr. Lauro de Barros Abreu
Treasurer, Dr. José Maria Caselo Campos
Assistant Treasurer, Dr. Roberto Oliva

New officers for the following Surgical Sections of the Brazilian Chapter have been announced:

Salvador
President, Prof. Dr. Benjamin da Rocha Salles
Vice-President, Dr. Mathias Mariani Bittencourt
Secretary-Treasurer, Dr. Eduardo Dantas Cerqueira
Delegate: Prof. Dr. Benjamin da Rocha Salles
Assembly Chairman, Dr. Fernando Luz, Filho

Bello Horizonte
President, Dr. José Bolivar Drumond
Vice-President, Dr. João Rezende Alves
Secretary-Treasurer, Dr. Oswaldo Borges da Costa
Delegate, Prof. Otto Pires Cirne
Assembly Chairman, Dr. Sylvio Miraglia

Ribeirão Preto
President, Dr. Paulo Valentie de Oliveira
Vice-President, Dr. Cesareo Horta
Secretary-Treasurer, Dr. Paulo Hoelz
Delegate, Dr. Fabio dos Santos Muza
Assembly Chairman, Dr. Joaquim Aurelio Cardoso, Filho

Recife
President, Prof. Dr. Armi M

Vice-President, Prof. Dr. Romero Marques
Secretary-Treasurer, Dr. Gilson Machado
Delegate, Dr. Francisco Beiró Uchoa
Assembly Chairman, Prof. Arminio Lalor Motta

Central Brazil
President, Dr. José de Paiva Abreu
Vice-President, Dr. Euclides de Freitas
Secretary-Treasurer, Dr. Eruipedes Garcia
Delegate, Dr. Arnaldo Godoy
Assembly Chairman, Dr. José Humberto Rodrigues da Cunha

Santos
President, Dr. Carols Moreira Gomes
Vice-President, Dr. Carlos Ribeiro Gomes
Secretary-Treasurer, Dr. Arcy Rodrigues Martins
Delegate, Dr. Arthur Domingues Pinto
Assembly Chairman, Dr. Emilio Navajas

Fortaleza
President, Dr. Haroldo Gondim Juacaba
Vice-President, Dr. Paulo de Melo Machado
Secretary-Treasurer, Dr. Livinio Virginio Pinheiro
Delegate and Assembly Chairman, Dr. José Carlos Ribeiro

Campinas
President, Dr. Alfredo Gomes Julio
Vice-President, Dr. Gabriel Oliveira Porto
Secretary-Treasurer, Dr. Armando Rocha Brito
Delegate, Dr. Alfredo Gomes, Junior
Assembly Chairman, Dr. José Giordano

The officers of the Brazilian Chapter and of the Surgical Sections of the Brazilian Chapter will be installed at a solemn ceremony to be held at the close of the First Assembly Chapter on Sept. 30, 1951.

For information pertaining to qualifications for

Fellowship, Associate Fellowship and Junior Membership in the

United States Chapter, International College of Surgeons

Please communicate with

Dr. Arnold S. Jackson, *Secretary*
1516 Lake Shore Drive
Chicago 10, Illinois

Preliminary Program

Sixteenth Annual Assembly

United States Chapter

INTERNATIONAL COLLEGE OF SURGEONS

Grand Ballroom, Palmer House

Monday, September 10, 1951

MORNING SESSION

Presiding: W. Wayne Babcock, M.D., LL.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylania
Secretary: Kenneth Sawyer, M.D., F.A.C.S., F.I.C.S., Denver, Colorado

Symposium on Surgery of the Colon

A.M.

9:00- 9:20 Glassman, Jacob A., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Associate Clinical Professor, Surgery, Cook County Graduate School of Medicine; Associate Attending Surgeon, Cook County Hospital.
"Some Practical Anatomical Considerations in Colon Surgery"

9:20- 9:40 Popper, Hans, M.D., Ph.D.
Chicago, Illinois
Director, [illegible]
County Ho[illegible]
Institute fo[illegible]
fessor, Pa[illegible]
Medical School.
"Newer Aspects of the Pathology of the Colon"

9:40-10:00 Case, James T., M.D., D.M.R.E., F.A.C.S., F.I.C.S., Chicago, Illinois
Professor Emeritus of Radiology, Northwestern University Medical School; Radiologist, Highland Park Hospital, Consultant to U. S. Public Health Service and Passavant Memorial Hospital, Consultant in Surgery, Battle Creek Sanitarium.
"The Roentgenologic Findings in Carcinoma of the Colon"

10:00-10:40 **Intermission to View Exhibits**

10:40-11:00 Portis, Sidney A., M.D., F.A.C.P.
Chicago, Illinois
Associate Clinical Professor of Medicine, University of Illinois (Rush); Medical Chief of Psychosomatic Group, Michael Reese Hospital.
and
Lawrence, Charles H., M.D.
Chicago, Illinois
Clinical Assistant in Medicine, Northwestern University Medical School.
"The Early Diagnosis of Carcinoma of the Colon"

11:00-11:20 McNealy, Raymond W., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Professor of Surgery, Cook County Graduate School of Medicine; Associate Professor of Surgery, Northwestern University Medical School; Chief Surgeon, Wesley Memorial Hospital.
"Surgery of the Right Colon"

11:20-11:40 Rosi, Peter A., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Associate Professor of Surgery, Northwestern University Medical School, Attending Surgeon, Wesley and Cook County Hospitals.
"Surgical Treatment of Carcinoma of the Left Colon and Rectum"

11:40-12:00 Wolfe, Francis D., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Instructor in Surgery, Northwestern University Medical School; Attending Surgeon, Wesley Memorial Hospital.
"Diverticulitis of the Colon"

AFTERNOON SESSION

Presiding: W. R. Lovelace, M.D., F.I.C.S., D.I.B.S., Albuquerque, New Mexico
Secretary: H. H. Sharp, M.D., A.I.C.S., Downington, Pennsylvania

P.M.

2:00- 2:20 Starry, Leo J., M.D., F.A.C.S., F.I.C.S., Oklahoma City, Oklahoma
Professor of Clinical Surgery and Director of Surgical Clinics, University of Oklahoma School of Medicine; Attending Surgeon, University Hospital and Oklahoma Hospital for Crippled Children; Chief of Staff, St. Anthony Hospital.
and
Dodson, Harrell, M.D.
Oklahoma City, Oklahoma
"Carcinoma of the Stomach"

2:20- 2:40 Peterson, Frank R., M.D., F.A.C.S.
Cedar Rapids, Iowa
Former Professor and Head of Department of Surgery, University of Iowa College of Medicine.
"Morbidity due to Incomplete Cholecystectomy"

2:40- 3:00 Bacon, Harry E., M.D., F.A.C.S., F.A.P.S., F.I.C.S., F.R.S.M.
Philadelphia, Pennsylvania
Professor and Head, Department of Proctology, Temple University Medical School; Head, Department of Proctology, St. Mary's Hospital.
and
McCrea, Lowrain E., M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
and
Trimpi, Howard D., M.D.
Philadelphia Pennsylvania
"Pelvic Exenteration for Rectal Carcinoma with Cutaneous Ureterostomy"

3:00- 3:20 Nordland, Martin, M.D., F.A.C.S.
Minneapolis, Minnesota
Associate Clinical Professor, Surgery, University of Minnesota Medical School; Surgical Consultant, Glen Lake Sanatorium; Surgeon, Northwestern Hospital, Minneapolis.
"Retroperitoneal Tumors"

3:20- 3:40 White, Charles S., M.D., Sc.D., F.A.C.S., F.I.C.S.
Washington, D. C.
Chief Department of Surgery, Doctors Hospital.
and
Stubbs, Donald, M.D.
Washington, D. C.

"Intra-Arterial Transfusions in the Treatment of Massive Gastroduodenal Hemorrhage"

3:40- 4:10 **Intermission to View Exhibits**

4:10- 4:30 McGregor, Douglas U., M.D., C.M., F.I.C.S., Hamilton, Canada.
Consulting Surgeon, St. Joseph's and Mountain Hospitals; Honorary Surgical Consultant, Hamilton General Hospital.
"Terminal Ileum Duplex"

4:30- 4:50 Harper, Fred R., M.D., F.A.C.S.
Denver, Colorado
Associate Professor of Surgery and Head of Department of Thoracic Surgery, University of Colorado School of Medicine.
"An Outline for the Treatment of Thoracic Injuries"

EVENING SESSION

P.M.

5:30 **Business meeting and dinner, Canadian Chapter of International College of Surgeons**
Film Forum: Scientific Motion Picture Program, with authors of film shown present for discussion.
Dr. Philip Thorek, Chicago, *Chairman*

Tuesday, September 11

MORNING SESSION

Presiding: Moses Behrend, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
Secretary: George Ferre, M.D., F.I.C.S. Miami Beach, Florida

A.M.

9:00-10:30 **PANEL DISCUSSION: "The Acute Surgical Abdomen"**
Jackson, Arnold S., M.D., F.A.C.S., F.I.C.S., Madison, Wisconsin, *Moderator*
Burns, Charles W., M.D., F.A.C.S., F.I.C.S., Winnipeg, Canada
Howser, John W., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Hendricks, William A., M.D., F.I.C.S., Chicago, Illinois
Vaughn, Arkell M., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Lichtenstein, Manuel E., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Coffey, Ralph R., M.D., F.A.C.S., F.I.C.S., Kansas City, Missouri

10:30-11:00 **Intermission to View Exhibits**

Cardiovascular Symposium

11:00-11:20 Fell, Egbert H., M.D., F.A.C.S.
Chicago, Illinois
Clinical Associate Professor of Surgery, University of Illinois Medical School: Attending Surgeon, Presbyterian and Cook County Hospitals. Consultant in Cardio-Vascular Surgery, Mt. Sinai Hospital.
"Surgery for Congenital Anomalies of the Arch of the Aorta"

11:20-11:40 Potts, Willis J., M.D., F.A.C.S.
Chicago, Illinois
Associate Professor of Surgery, Northwestern University Medical School; Surgeon-in-Chief, Children's Memorial Hospital.
"Evaluation of the Surgical Treatment of Congenital Pulmonary Stenosis"

11:40-12:00 Pearl, Felix L., M.D., F.A.C.S., F.I.C.S., San Francisco, California
Chief, Department of Sympathetic and Vascular Surgery, Mount Zion Hospital.
"Roentgenologic Visualization of the Coronary Arteries in the Intact Animal"

12:00-12:20 Samuels, Saul S., M.D.
New York, New York
Director and Attending Angiologist, The Brooklyn Hospital for the Aged; Chief Department of Peripheral Arterial Diseases, Stuyvesant Polyclinic Hospital; Associate Attending Angiologist, Manhattan General Hospital.
"Treatment of Gangrene of the Extremities"

AFTERNOON SESSION

Presiding: Curtice Rosser, M.D., F.A.C.S., F.I.C.S., Dallas, Texas
Secretary: Ralph E. Scovel, M.D., F.I.C.S., San Francisco, California

P.M.

2:00- 2:20 Maxeiner, Stanley R., M.D., F.A.C.S., F.I.C.S., Minneapolis, Minnesota
Clinical Professor of Surgery, University of Minnesota Medical School; Senior Consultant in Surgery, U. S. Veterans Hospital, Minneapolis.
"Synovioma: Review of the Literature, Diagnosis, Pathology, Treatment, End Results"

2:20- 2:40 Kurten, Russell M., M.D., F.A.C.S.
Racine, Wisconsin
Chief of Surgery, St. Mary's Hospital; Consulting Surgeon, St. Luke's Hospital.
"Management of Intestinal Fistula"

2:40- 3:00 Koontz, Amos R., M.D., D.Sc. (Hon.), F.A.C.S., Baltimore, Maryland
Assistant Professor of Surgery, Johns Hopkins University School of Medicine.
"Difficult Hernias: Use of Tantalum Mesh in Repair"

3:00- 3:20 Adson, Alfred W., M.D., F.A.C.S., F.I.C.S. (Hon.), Rochester, Minnesota
Professor of Neurosurgery, Mayo Foundation; Senior Neurosurgeon, Mayo Clinic.
"Cervical Ribs: Symptoms, Differential Diagnosis and Indications for of the Insertion of the Scalenus Anticus Muscle"

3:20- 4:00 **Intermission to View Exhibits**

4:00- 4:20 Marshall, Samuel F., M.D., F.A.C.S.
Boston, Massachusetts
Surgeon, Lahey Clinic, New England Deaconess Hospital and New England Baptist Hospital.
"Follow-up Results of Surgery in Gastric Cancer; A Plea for Earlier Diagnosis and More Radical Surgery"

4:20- 4:40 Dotter, Charles T., M.D.
New York, New York
Assistant Professor of Radiology, Cornell University Medical College; Instructor in Medicine, Cornell University Medical College.
and
Steinberg, Israel, M.D.
New York, New York
"Angiocardiography in the Differential Diagnosis and Prognostic Evaluation of Mediastinal Tumors"

EVENING SESSION

Joint Meeting of the Urology, Gynecology and Obstetrics Sections
Grand Ballroom

Presiding: M. Leopold Brodny, M.D., F.A.C.S., F.I.C.S., Boston, Massachusetts
Secretary: Cyril K. Church, M.D., F.I.C.S., New York, New York

Urology

P.M.

8:00- 8:20 **Thompson, Gershom J., M.D., F.A.C.S., F.I.C.S. (Hon.)**
Rochester, Minnesota
"Recent Advances in Prostatic Surgery of Interest to the General Surgeon"

8:10- 8:20 **Rolnick, Harry C., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois**
"Urological Literature and the General Surgeon"

8:20- 8:30 **Smith, Parke G., M.D., F.A.C.S.**
Cincinnati, Ohio
"Recent Urological Armamentarium of Interest to the General Surgeon, Especially Renal Arteriography"

8:30- 8:40 **Burns, Edgar, M.D., F.A.C.S.**
New Orleans, Louisiana
"Progress in Pediatric Urology of Interest to the General Surgeon"

8:40- 8:50 **Carroll, Grayson, M.D., F.A.C.S.**
St. Louis, Missouri
"Antibiotics"

Obstetrics and Gynecology

Presiding: Gilbert F. Douglas, M.D., F.A.C.S., F.I.C.S., Birmingham, Alabama

9:00- 9:10 **Kelso Joseph W., M.D., F.A.C.S., F.I.C.S., Oklahoma City, Oklahoma**
"What's New in Pelvic Surgery"

9:10- 9:20 **Mishell, Daniel R., M.D., F.I.C.S.**
Beverly Hills, California
"Recent Developments in the Study of Sterility"

9:20- 9:30 **Soule, Samuel D., M.D., F.A.C.S.**
St. Louis, Missouri
"Control and Elimination of the Acute Post-Surgical Menopause with Use of Estradiol Pellet Performed at the Time of Surgery"

9:30- 9:40 **Greenblatt, Robert B.**
Augusta, Georgia
"Clinical Application of Vulvar Fluorescence"

Wednesday, September 12

MORNING SESSION

Presiding: George M. Curtis, M.D., F.A.C.S., F.I.C.S. (Hon.), Columbus, Ohio
Secretary: Lloyd Netto, M.D., F.I.C.S.
West Palm Beach, Florida

Symposium: "Acute Intestinal Obstruction"

A.M.

9:00- 9:20 **Gatch, Willis D., M.D., F.A.C.S.**
Indianapolis, Indiana
Professor of Surgery and Head of Department of Surgery, Indiana University School of Medicine.
"The Causes of Death from Bowel Obstruction, with Deductions on Treatment"

9:20- 9:40 **Lockwood, Ira H., M.D., F.I.C.S. (Radiology), Kansas City, Missouri**
Director, Department of Radiology, Research Hospital and Clinic; Consulting Radiologist, Kansas City Municipal Hospital.
"Acute Small Intestinal Obstructions"

9:40-10:00 **Hunt, Claude J., M.D., F.A.C.S., F.I.C.S., Kansas City, Missouri**
Chief, Hunt Surgical Clinic; Chief Surgeon, Research Hospital and Kansas City General
"Acute Intestinal Obstruction in the Small Bowel"
Hospital.

10:00-10:20 **Harris, Franklin I., M.D., F.A.C.S., F.I.C.S., San Francisco, California**
Chief of Staff and Chief of Department of Surgery, Mount Zion Hospital
"Indications and Contra-Indications for Intestinal Intubation in Acute Intestinal Obstruction"

10:20-11:00 **Intermission to View Exhibits**

11:00-12:00

Panel Discussion: "Acute Intestinal Obstruction"
Acuff, Herbert, M.D., F.A.C.S., F.I.C.S., Knoxville, Tennessee, *Moderator*
Thorek, Philip, M.D., F.A.C.S., F.I.C.S., *Chicago, Illinois*
Pontius, Guy V., M.D., F.A.C.S., *Chicago, Illinois*
Noble, Thomas B., Jr., M.D., F.I.C.S., Indianapolis, Indiana

AFTERNOON SESSION

Presiding: R. J. Wilkinson, M.D., F.A.C.S., F.I.C.S., Huntington, West Virginia
Secretary: Andrew W. Bunten, M.D., F.I.C.S., *Cheyenne, Wyoming*

P.M.

2:00- 2:20 **Appleby, Lyon H., M.D., F.R.C.S. (Eng.), F.R.C.S. (Can.), F.A.C.S., F.I.C.S., Vancouver, Canada**
Chief Surgeon, St. Paul's Hospital, Consulting Surgeon, Children's Hospital.
"Gas Cysts of the Intestine"

2:20- 2:40 **Thompson, William J., M.D., F.A.C.S., F.I.C.S., St. Louis, Missouri**
Chief, Surgical Division, De Paul Hospital, Surgical Consultant, St. Louis City Hospital
"Acute Sigmoid Diverticulitis"

2:40- 3:00 **Bisgard, J. Dewey, M.D., F.A.C.S.**
Omaha, Nebraska
Professor of Surgery, University of Nebraska School of Medicine; Chief of Surgery, Bishop Clarkson Memorial Hospital; Attending Surgeon, Nebraska Methodist and Children's Memorial Hospitals.
"Some Benign Surgical Lesions of the Esophagus"

3:00- 3:20 **Coleman, Everett P., M.D., F.A.C.S., F.I.C.S., Canton, Illinois**
Chief of Staff, Graham Hospital, Chief Surgeon, Coleman Clinic.
"Late Complications Following Gallbladder Surgery"

3:20- 4:10 **Intermission to View Exhibits**

4:10- 4:30 **Klemme, Roland M., M.D., F.A.C.S., F.I.C.S., St. Louis, Missouri**
Professor of Surgery, St. Louis University School of Medicine.
"Pain—Chemotherapeutic and Surgical Approach"

4:30- 4:50 **Bartlett, Willard, Jr., M.D., F.A.C.S., F.I.C.S., St. Louis, Missouri**
Assistant Professor of Clinical Surgery, St. Louis University School of Medicine.
"Obesity in Relation to Ventral Hernia Repair"

Wednesday Evening, September 12

Banquet

Grand Ballroom, Palmer House, Chicago
7:30 P.M.
(Dress Optional)
A. Lawrence Abel, M.S., London; F.R.C.S. (Eng.), F.I.C.S. (Hon.), London, En l

Member of Council, Royal College of Surgeons of England, Senior Surgeon, The Princess Beatrice Hospital; Senior Surgeon, The Gordon Hospital for Rectal and Gastro-Enterological Diseases; Surgeon, The Royal Cancer Hospital, President, Metropolitan Counties Branch, British Medical Association; Member of Council, British Medical Association; Hon. Fellow of the American Medical Association, Hon. Fellow of the American Proctologic Society.
"What Is Happening in Britain—Fact and Fiction"

Thursday, September 13

MORNING SESSION

Presiding: Paul F. Doege, M.D., F.A.C.S., F.I.C.S., Marshfield, Wisconsin
Secretary: J. M. de los Reyes, M.D., F.A.C.S., F.I.C.S., Los Angeles, California

A.M.

9:00- 9:20 **McRoberts, J. W., M.D., M.C., M.Sc. (Surg.), F.A.C.S., F.I.C.S.**
Sheboygan, Wisconsin
Preceptor, University of Wisconsin Medical School, Surgeon, Sheboygan Memorial Hospital
"Experiences with Acute Pain in the Left Lower Quadrant"

9:20- 9:30 **Lans, Hyman S., M.D.**
Chicago, Illinois
Resident Surgeon, Cook County Hospital, Research Fellow, Hektoen Institute for Medical Research of the Cook County Hospital, Founder Junior Member, International College of Surgeons
and
Stein, Irving F., Jr., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Associate Professor of Obstetrics and Gynecology, Northwestern University Medical School
and
Meyer, Karl A., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Professor of Surgery, Northwestern University Medical School Chairman, Department of Surgery, Cook County Hospital
"The Occurrence and Treatment of Potassium Deficiency in Surgical Patients"

9:30- 9:40 **Hobbins, William B., M.D.**
Chicago, Illinois
Senior Surgical Resident, Cook County Hospital.
and
Aries, Leon J., M.D., F.A.C.S.
Chicago, Illinois
Assistant Professor of Surgery, Northwestern University Medical School, Professor of Surgery, Cook County Graduate School
"Incarcerated Diaphragmatic Hernia"

9:40-10:00 **Holmgren, Luther E., M.D., F.A.C.S.**
Madison, Wisconsin
Surgeon, Jackson Clinic
"Modern Concepts of Treatment of Varicose Veins"

10:00-10:40 **Abel A. Lawrence, M.S., F.R.C.S.**
London, England
Senior Surgeon, The Princess Beatrice Hospital Senior Surgeon, The Gordon Hospital for Rectal and Gastro-Enterological Diseases, Surgeon, The Royal Cancer Hospital
"Abdomino-Perineal Operation for Carcinoma of the Rectum"

10:40-11:00 **Intermission to View Exhibits**

11:00-11:20 **Good, Louis P., M.D., M.S., F.A.C.S.**
Texarkana, Texas
Chief of Staff Southern Clinic President of Staff St Michael's Hospital
"A Quick Method for Mobilization of the Intra-Pancreatic Portion of the Common Duct and its Use in Repairing Extensive Defects in the Biliary System"

11:20-12:00 **Allen, Harvey S., M.D., F.A.C.S.**
Chicago, Illinois
Assistant Professor of Surgery, Northwestern University Medical School, Attending Surgeon, Passavant Memorial and Cook County Hospitals
"Management of Burns"

AFTERNOON SESSION

Presiding: Karl A. Meyer, M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Secretary: J. O. Morgan, M.D., F.A.C.S., F.I.C.S., Gadsden, Alabama

P.M.

2:00- 2:20 **Meyeding, Henry W., M.D., M.S. F.A.C.S., F.I.C.S., Rochester, Minnesota**
Professor of Orthopedic Surgery, Mayo Foundation, University of Minnesota Medical School, Senior Consulting Orthopedic Surgeon, Mayo Clinic.
"Some Recent Advances in Surgery of the Bones and Joints"

2:20- 2:30 **Hall, Custis Lee, M.D., F.A.C.S., F.I.C.S., Washington, D. C.**
Clinical Professor of Surgery, George Washington Medical School, Chief, Department of Orthopedics, Doctors Hospital, Consultant in Orthopedic Surgery, Naval Medical Center.
"Discussion of Paper Presented by Dr. Henry W. Meyerding"

2:30- 2:40 **Garceau, George J., M.D., F.I.C.S.**
Indianapolis, Indiana
Professor of Orthopedic Surgery, Indiana University Medical School.
"Discussion of Paper Presented by Dr. Henry W. Meyerding"

2:40- 3:10 **Intermission to View Exhibits**

3:10- 3:30 **Kline, Philip S., M.D.**
San Antonio, Texas
Former Instructor of Neoplastic Diseases, Hines Hospital, Hines, Illinois, Former Chief, Surgical Service, McCloskey Veterans Administration Center, Temple, Texas.
"The Gastric Cripple Following Total Gastrectomy and a Suggested Solution"

3:30- 3:50 **Yanagi, Soichi, M.D., F.I.C.S.**
Sapporo, Japan
Professor of Surgery, Hokkaido University College of Medicine.
"Thermal Effects on Wound Healing"

3:50- 4:10 **Mayo, Charles W., M.D., M.S., LL.D., F.A.C.S., Rochester, Minnesota**
Professor of Surgery, Mayo Foundation, University of Minnesota Medical School, Surgeon, Mayo Clinic.
"Unsuspected Cholelithiasis Discovered at Laparotomy"

4:10- 4:30 **Bendani, Prof. Dr. Giuseppe, M.D., F.I.C.S., Rome, Italy**
Professor of Clinical Surgery, University of Rome
(Title to be announced later)

Thursday, September 13

Convocation

Chicago Civic Opera House, Chicago

7:30 **Induction of new members**

Section Meetings

Orthopedic Section

Monday, September 10

MORNING SESSION

Palmer House, Crystal Room

Presiding: Edward L. Compere, M.D., F.A.C.S., F.I.C.S., Chicago, Illinois

Secretary: Carlo Scuderi, M.D., F.A.C.S., F.I.C.S., Chicago, Illinois

A.M.

9:30-10:00 **Anderson, Roger, M.D., F.A.C.S., F.I.C.S., Seattle, Washington**
Senior Consultant, University of Washington School of Medicine; Chief, Orthopedic Staff King County Hospital; Orthopedic Consultant, U. S. Marine Hospital, Seattle.
"Acrylic Replacements for Head and Neck of the Femur"

10:00-10:30 **Chandler, Fremont A., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois**
Professor of Orthopedic Surgery, University of Illinois School of Medicine; Senior Attending Orthopedic Surgeon, St. Luke's Hospital, Chicago.
"Muscular Torticollis"

10:30-11:00 **McMaster, Paul E., M.D., F.A.C.S., F.I.C.S., Los Angeles, California**
Clinical Professor of Orthopedic Surgery, University of Southern California School of Medicine; Senior Orthopedic Consultant, Sawtel (U. S. Veterans') Hospital.
"The Use of Suction Socket Prosthesis for Above-Knee Amputation"

11:00-11:30 **Pipkin, Garrett, M.D., F.A.A.O.S., F.I.C.S., Kansas City, Missouri**
Attending Orthopedic Surgeon, Kansas City General Hospital and St. Joseph Hospital.
"Intramedullary 'K' Nail Fixation of the Humerus to the Spine of the Scapula for Shoulder Arthrodesis"

11:30-12:00 **Young, H. Herman, M.D., M.S., F.A.C.S., Rochester, Minnesota**
Assistant Professor of Orthopedic Surgery, The Mayo Foundation; Consulting Orthopedic Surgeon, Mayo Clinic, Colonial and St. Mary's Hospitals.
"Non-Neurologic Lesions Simulating Protruded Intervertebral Disk"

AFTERNOON SESSION

P.M.

2:00- 2:30 **Jewett, Eugene L., M.D., F.A.C.S., F.I.C.S., Orlando, Florida**
Attending Orthopedic Surgeon, Orange Memorial Hospital, Orlando; Consulting Orthopedic Surgeon, Florida Sanitarium and Hospital, Orlando.

And Co-authors:

Albee, Fred H., Jr., M.D., F.I.C.S.
Powers, Earl J., M.D., F.I.C.S.
Stanford, Freeman DeWitt, M.D.
"Treatment of all Fractures of the Femoral Neck and Trochanteric Region with the Original One-Piece Flange Nail"

2:30- 3:00 **Hall, Custis Lee, M.D., F.A.C.S., F.I.C.S., Washington, D. C.**
Clinical Professor of Surgery, George Washington Medical School; Chief, Department of Orthopedics, Doctors Hospital; Consultant in Orthopedic Surgery, Naval Medical Center.
"Pelvic Anchor Supersedes Counter-Traction"

3:00- 3:30 **Scuderi, Carlo S., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois**
Associate Professor of Surgery, University of Illinois School of Medicine; Professor of Surgery, Cook County Graduate School

and

Ippolito, Anthony, M.D.
"Prevention and Treatment of Non-Union of Supra-Condylar Fractures of the Femur"

3:30- 4:00 **Moe, John H., M.D., F.A.C.S.**
Minneapolis, Minnesota
Assistant Clinical Professor of Orthopedic Surgery, University Hospital; Chief, Orthopedic Staff, Minneapolis General Hospital.
"Treatment of Intertrochanteric Fractures. Experiences with Various Methods of Internal Fixation"

4:00- 4:30 **Miller, Donald S., M.D., Ph.D., F.A.C.S., F.I.C.S., Chicago, Illinois**
Professor of Orthopedic Surgery, Cook County Graduate School of Medicine; Chairman, Orthopedic Surgery, Chicago Medical School; Attending Surgeon, Cook County Hospital.
"Gangrene of the Extremities, Precipitated by Orthopedic and Traumatic Conditions (in Patients with Normal and Reduced Circulation)"

4:30- 5:00 **Padula, Ralph H., M.D., F.I.C.S.**
South Norwalk, Connecticut
Attending Orthopedic Surgeon, Norwalk General Hospital; Director of Orthopedics, St. Joseph's Hospital, Stamford.
"Ruptured Intervertebral Discs. A Five-Year Follow-up of 114 Operated Cases"

Plastic Surgery Section

Tuesday, September 11

Palmer House, Crystal Room

MORNING SESSION

Presiding: Neal Owens, M.D., F.A.C.S., New Orleans, Louisiana

Secretary:

A.M.

9:00- 9:30 **Owens, Neal, M.D., F.A.C.S., F.I.C.S.**
New Orleans, Louisiana
Professor of Plastic Surgery, Tulane University of Louisiana School of Medicine; Head of Department, Plastic Surgery, Eye, Ear, Nose and Throat Hospital; Senior Visiting Surgeon in Charge of Plastic Surgery (Tulane Unit), Charity Hospital.
"Chairman's Address"

9:30-10:00 **Sutton, Leon E., M.D., F.A.C.S.**
Syracuse, New York
Professor of Clinical Plastic Surgery, Syracuse University College of Medicine; Chief of Plastic Surgery, University and Memorial Hospitals.
"The Treatment of Scar Contractures of the Extremities in Children"

10:00-10:30 **Figi, Frederick A., M.D., F.A.C.S.**
Rochester, Minnesota
Professor of Plastic Surgery, Minnesota Graduate School, Mayo Foundation; Head of Section, Plastic Surgery and Laryngology, Mayo Clinic.
"Repair of Postoperative Harelip and Nasal Deformities"

10:30-11:00 **Steffensen, Wallace H., M.D., F.A.C.S., F.I.C.S., Grand Rapids, Michigan**
Consultant in Plastic Surgery, Blodgett Memorial Hospital, Grand Rapids.
"Further Considerations in the Repair of the Unilateral Cleft Lip"

11:00-11:30 **O'Connor, Gerald Brown, M.D., F.A.C.S., San Francisco, California**

Clinical Instructor in Surgery, Stanford University School of Medicine.
"The Treacher-Collins Syndrome"

11:30-12:00 Pickrell, Kenneth, M.D., F.A.C.S.
Durham, North Carolina
Professor of Plastic and Maxillo-Facial Surgery, Duke University School of Medicine and Duke Hospital, Durham.
"Tumors of the Face and Neck in Children"

12:00-12:30 Davis, Albert D., D.D.S., M.D., F.A.C.S., San Francisco, California
Assistant Clinical Professor of Surgery (Plastic), Stanford University School of Medicine.
"The Problem of Melanoma"

AFTERNOON SESSION

P.M.

2:00- 2:30 Dingman, Reed O., D.D.S., M.D., M.S., F.A.C.S., Ann Arbor, Michigan
Associate Professor of Oral Surgery and Special Lecturer in Oral and Maxillofacial Surgery, University of Michigan Medical School.
"The Use of Iliac Bone in the Repair of Cranial Defects"

2:30- 3:00 Adams, William M., M.D., F.A.C.S., F.I.C.S., Memphis, Tennessee
Assistant Professor of Surgery (Plastic), University of Tennessee College of Medicine; Attending Plastic Surgeon, Baptist Memorial, St. Joseph, Methodist and John Gaston Hospitals, Memphis.
"The Relation of the Plastic Surgeon in the Rehabilitation of the Crippled Child"

3:00- 3:30 Pierce, George Warren, M.D., F.A.C.S., San Francisco, California
Chief, Department of Plastic Surgery, St. Francis Hospital; Consulting Plastic Surgeon, Children's, U. S. Marine, Mount Zion, Southern Pacific, and French Hospitals.
"Early Orthodonture in the Cleft Palate Patient"

3:30- 4:00 Slaughter, Wayne B., M.D.
Chicago, Illinois
"The Service Problem in Complete Rehabilitation of the Child with Cleft Palate"

4:00- 4:30 Kemper, John W., D.D.S., M.D., F.A.C.S., Ann Arbor, Michigan
Professor of Oral Surgery, Dentistry, University of Michigan Medical School; Head of Oral Surgery, University Hospital.
"Retropositioning the Soft Palate by Osteomucoperiosteal Flaps"

4:30- 5:00 Kitlowski, Edward A., M.D.
Baltimore, Maryland
Clinical Professor of Plastic Surgery, University of Maryland School of Medicine.
"Reconstruction of Post-traumatic Palates"

5:00- 5:30 Bethea, John Hardee, M.D.
Detroit, Michigan
Senior Instructor in Plastic Surgery, Wayne University College of Medicine; Diplomate of American Board of Plastic Surgery.
"Surgical Correction of Congenital Deformities of the Hands"

Section on Ophthalmology and Otorhinolaryngology

Tuesday, September 11

Clinical Meetings

MORNING SESSION—OPHTHALMOLOGY

Chicago Eye, Ear, Nose and Throat Hospital
231 West Washington Street

A.M.

9:00- 9:30 **Surgery, Dry Clinics, Round-Table Discussions.**
Nugent, Oscar B., M.D., F.A.C.S., F.I.C.S.
Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College and Staff.
"Surgery of Dislocated Lenses in Children" (Author's Technique)
Slides, Dry Clinics and Presentation of Cases.

Wolfe, Otis R., M.D., F.I.C.S.
Marshalltown, Iowa
Chief, Department of Ophthalmology, Deaconess Hospital.
"Marfan's Syndrome"

Perritt, Richard A., M.D., F.I.C.S.
Chicago, Illinois
Associate, Department of Ophthalmology, Northwestern University.

MORNING SESSION—OTORHINOLARYNGOLOGY

Clinic-Research and Educational Hospital
1835 West Polk Street

10:00-12:00 **"What's New in Broncho-Esophagology"**
Holinger, H. Paul, M.D., F.A.C.S.
Chicago, Illinois
Professor, Broncho-Esophagology, Department of Otolaryngology, University of Illinois.

Wednesday, September 12

Palmer House, Crystal Room

MORNING SESSION—OTORHINOLARYNGOLOGY

Presiding: Matthew S. Ersner, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylania
Secretary: Louis Savitt, M.D., F.I.C.S., Chicago, Illinois

A.M.

10:00-10:20 Goldman, Irving B., M.D., F.A.C.S., F.I.C.S., New York, New York
Attending Rhinoplastic Surgeon, Mount Sinai Hospital; Attending Otolaryngologist and Rhinoplastic Surgeon, Beekman-Downtown Hospital.
"Maxillo-Facial Triad and Its Correction"

10:30-10:50 McNaught, Robert Chamberlain, M.D.
San Francisco, California

11:00-11:20 Lederer, Francis L., M.D., F.A.C.S.
Chicago, Illinois
Professor and Head, Department of Otolaryngology Clinic-Research and Educational Hospital, University of Illinois; Otolaryngologist-in-Chief, Illinois Eye and Ear Infirmary.
"The Menacing Spectre of Chronic Aural Suppuration"

11:30-11:50 Tucker, Gabriel, M.D., F.A.C.S.
Philadelphia, Pennsylvania
Professor of Broncho-Esophagology and Laryngeal Surgery, Graduate School of Medicine, University of Pennsylvania.
"Tumors of the Larynx"

12:00 Noon **Luncheon Meeting of the Executive Committee**

AFTERNOON SESSION—OPHTHALMOLOGY

Palmer House, Crystal Room

Presiding: Edmund B. Spaeth, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
Secretary: Clarence H. Albaugh, M.D., F.A.C.S., F.I.C.S., Los Angeles, California

P.M.

2:20- 2:40 Gailey, Watson, M.D., F.I.C.S.
Bloomington, Illinois
Chief Surgeon, Gailey Eye Clinic.
"Do's and Don'ts of Cataract Surgery"

Ophthalmology and Otorhinolaryngology Section

Wednesday, September 12

2:50- 3:10 Berens, Conrad, M.D., F.A.C.S., F.I.C.S., New York, New York
pital, University of Illinois: Otolaryngologist-of Research, New York Eye and Ear Infirmary.
and
Girard, Louis J., M.D.
New York, New York
"Secondary Glaucoma" (Surgical Management and with Especial Reference to Cycloelectrolysis)

3:20- 3:40 Mayer, Leo J., M.D., F.I.C.S.
St. Louis, Missouri
Ophthalmologist, Jewish Hospital
"Fundamentals of Eye Surgery"

3:50- 4:10 Krewson, William E., III, M.D., F.A.C.S., Philadelphia, Pennsylvania
Assistant Professor of Ophthalmology, Graduate School, University of Pennsylvania.
"Effect of Inferior Oblique Surgery upon Lateral Deviation"

Thursday, September 13

MORNING SESSION—OPHTHALMOLOGY
Palmer House, Crystal Room
Presiding: Edmund B. Spaeth, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
Secretary: Richard A. Perritt, M.D., F.I.C.S., Chicago, Illinois

A.M.
10:00-10:20 **(Paper by West Coast Speaker—Retinal Separation.)**
10:30-10:50 **(Paper by Foreign Guest Speaker)**
11:00-12:00 **Study Club: "Interesting Maneuvers in Cataract Surgery"**
Moderator: Paul C. Craig, M.D., F.A.C.S., F.I.C.S., Reading, Pennsylvania
Instructors: Watson Gailey, M.D., F.I.C.S., Bloomington, Illinois
Samuel G. Higgins, M.D., F.I.C.S., Milwaukee, Wisconsin

Ophthalmology and Otorhinolaryngology Section

Thursday Evening, September 13

MORNING SESSION—OTORHINOLARYNGOLOGY
Albert Merritt Billings Hospital
950 East 59th Street

10:00-12:00 **Surgical Clinics**
"The Surgical Management of Carcinoma of the Paranasal Sinuses"
[illegible] M.D., F.A.C.S.
[illegible]
[illegible] Clinic: Pro-
[illegible] University.
and
Schuknecht, Harold F., M.D.
Chicago, Illinois

12:30 **Luncheon—Palmer House**
Presiding: Edmund B. Spaeth, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
Secretary: Paul C. Craig, M.D., F.A.C.S., F.I.C.S., Reading, Pennsylvania
Luncheon of entire Section in honor of foreign guests. Non-scientific addresses by guests of honor for Ophthalmology and Oto-Rhino-Laryngology.

2:30- 2:45 **Business Meeting of Entire Section**
Palmer House, Crystal Room
Presiding: Edmund B. Spaeth, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
Secretary: Paul C. Craig, M.D., F.A.C.S., F.I.C.S., Reading, Pennsylvania

AFTERNOON SESSION—OTORHINOLARYNGOLOGY
Presiding: Chevalier L. Jackson, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
Secretary: Louis Savitt, M.D., F.A.C.S., F.I.C.S., Chicago, Illinois

Thursday, September 13

2:45- 3:15 **Study club: On Treatment of Sinus Diseases**
Moderator: Matthew S. Ersner, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
Instructors: To be announced later.
3:30- 4:00
(Paper by Foreign Guest Speaker)

Friday, September 14

Ophthalmology—Clinical Meetings
Northwestern University Medical School
Ward Memorial Building
303 East Chicago Avenue
Dry Clinics. Discussions of Various Phases of Ophthalmology.
Vail, Derrick T., M.D., F.A.C.S.
Chicago, Illinois
Professor and Chairman, Department of Ophthalmology, Northwestern University Medical School and Staff.

Urology Section

Wednesday Morning, September 12

Palmer House, Room 18
Presiding: M. Leopold Brodny, M.D., F.A.C.S., F.I.C.S., Boston, Massachusetts
Secretary: Cyril Klock Church, M.D., F.I.C.S., New York, New York

A.M.
9:00- 9:20 Flocks, Rubin H., M.D., F.A.C.S.
Iowa City, Iowa
Professor and Head, Department of Urology, State University of Iowa College of Medicine; Chief Urologist, University Hospitals.
"Carcinoma of the Prostate"

9:20- 9:40 McCrea, Lowrain E., M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
Clinical Professor of Urology, Temple University School of Medicine; Attending Urologist, Philadelphia General Hospital.
"The Importance of Nerve Supply of the Urinary Bladder in Surgery of the Recto-Sigmoid"

9:40-10:00 de la Peña, Alfonso, Prof. Dr., F.I.C.S., Madrid, Spain
Professor of Urology, Faculty of Medicine, University of Madrid.
"Phlebographic Studies of the Pelvic Plexus on the Living Subject"

10:00-10:40 **Intermission to View Exhibits**

10:40-11:00 Tracy, Edward M., M.D.
Buffalo, New York
"Steroid Hormones in Carcinoma of the Prostate"

11:00-11:20 Nicely, Eugene Park, M.D., F.I.C.S.
Knoxville, Tennessee
Chief of Urology, St. Ma [illegible]'s Memori[illegible]i-tal.
"Urological Sy [illegible]

Postural Correction"
11:20 **Discussion—Moderator:**
George H. Ewell, M.D., F.I.C.S.
Madison, Wisconsin

Obstetrics and Gynecology Section

Wednesday Morning, September 12
Palmer House, Room 14

A.M.

9:00- 9:15 Cohen, M. Stanley, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
Associate, Department of Obstetrics and Gynecology, Temple University Medical School; Assistant Obstetrician and Gynecologist, Jewish Hospital; Associate Obstetrician and Gynecologist, Temple University Hospital.
"The Practical Application of Analgesia and Anesthesia in Obstetrics"

9:15- 9:30 Galloway, Charles E., M.D., F.A.C.S.
Evanston, Illinois
Former Assistant Professor of Obstetrics and Gynecology, Northwestern University Medical School; Obstetrician and Gynecologist, Evanston Hospital.
"The Cervix in Pregnancy"

9:30 9:45 Daniel, Walter W., M.D., F.I.C.S.
Atlanta, Georgia
Former Instructor, Emory University School of Medicine.
and
Inman, John, M.D.
"Rupture of the Pregnant Uterus"

9:45-10:00 Hahn, George A., M.D., F.A.C.S.
Philadelphia, Pennsylvania
Associate in Obstetrics and Gynecology, Jefferson Medical College.
"Uterine Malignancy—Method of Treatment"

10:00-10:45 **Intermission to View Exhibits**

10:45-11:00 Rucker, M. Pierce, M.D., LL.D.
Richmond, Virginia
Emeritus Obstetrician-in-Chief, Johnston-Willis Hospital.
"Obstetric Difficulties"

11:00-11:15 Andrews, Gould, M.D.
Oak Ridge, Tennessee
Assistant Professor of Medicine, Medical College of Alabama; Chief of Clinical Service, Oak Ridge Institute of Nuclear Studies.
"Therapeutic Uses of Radioisotopes"

11:15-11:30 Douglas, Gilbert F., M.D., F.A.C.S., F.I.C.S., Birmingham, Alabama
Associate Professor of Gynecology, Medical College of Alabama.
(Chairman's Address) "Uterine Bleeding—Vision of Joy or a Sign of Woe"

11:30-11:45 Ayre, James E., M.D.
Montreal, Canada
"Cancer Detection"

Occupational Surgery Section

Thursday Afternoon, September 13
Palmer House, Room 14

P.M.

2:00- 2:30 Aitken, Alexander P., M.D., F.A.C.S.
Boston, Massachusetts
Instructor in Orthopedic Surgery, Tufts College Medical School.
"End Results of Ruptured Intervertebral Discs in Industry"

2:30- 3:00 Kelikian, Hampar, M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Assistant Professor of Bone and Joint Surgery, Northwestern University Medical School; Senior Orthopedic Surgeon, Wesley Memorial Hospital; Attending Orthopedic Surgeon, Cook County Hospital.
"Arthritic Occupational Disabilities and their Treatment by Surgery"

3:00- 3:30 **Intermission to View Exhibits**

3:30- 4:00 Lewis, Elbert K., M.D., F.R.S.N.A., F.I.C.S. (Radiology), Chicago, Illinois
Instructor in Radiology, Northwestern University Medical School; Radiologist, St. Bernard's Hospital.
"Accessory Bones and Anomalies often Mistaken for Fractures"

4:00- 4:30 Lambert, Claude, N., M.D., M.S.
Chicago, Illinois
Associate Professor of Orthopedic Surgery, University of Illinois College of Medicine; Attending Orthopedic Surgeon, St. Luke's Hospital.
"The Relationship of Occupational Strains to the 'Disc Syndrome'"

4:30- 5:00 Burkholder, Theodore M., M.D., F.A.C.S., Chicago, Illinois
Attending Urologist, Illinois Central, Evangelical and Englewood Hospitals.
"Occupational Injuries to the Male Urethra"

Joint Meeting of Obstetrical and Gynecological Section with Urological Section

Wednesday Afternoon, September 12
Meeting Dedicated to Dr. Guy L. Hunner
Presiding: George H. Ewell, M.D., F.I.C.S., Madison, Wisconsin

P.M.

2:00- 2:15 Guy L. Hunner, M.D., F.A.C.S.
Baltimore, Maryland
"A Few Reminiscences of One Who Has Worked in Close Association with Gynecologists, Obstetricians, and Urologists for More than a Half-Century."

2:15- 2:30 Howard W. Jones, Jr., M.D.
Baltimore, Maryland
"Gynecological Aspects of Urology."

Symposium
"The Renal Factor in Pregnancy—Non-Toxemic Hypertension of Pregnancy."

2:30- 2:45 Gynecological Viewpoint: Wynne Silbernagel, M. D., Columbus, Ohio

2:45- 3:00 Urological Viewpoint: John W. Ferrin, M.D., Chicago, Illinois

3:00- 3:10 **Discussants:**
Edwin J. Decosta, M.D.
Chicago, Illinois
Walter J. Reich, M.D., F.A.C.S., F.I.C.S., Chicago, Illinois

3:10- 3:20 **General Discussion**

Symposium

"Stress Incontinence in the Female."

3:20- 3:35 Gynecological Approaches: Charles B. Kelley M.D., F.A.C.S., F.I.C.S. Jersey City, New Jersey

3:35- 3:50 Urological Approaches: Herbert E. Landes, M.D., F.A.C.S., Chicago

3:50- 4:00 **Discussants:**
M. Leopold Brodney, M.D., F.A.C.S., F.I.C.S., Boston, Massachusetts
To be announced

Symposium

"Management of the Surgical Traumatized Ureter."

4:10- 4:25 Urological Factor: Alfonso Davalos, M.D., New York City, New York

4:25- 4:40 Gynecological Factor: To be announced

4:40- 4:50 **Discussants:**
J. P. Greenhill, M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
To be announced

4:50- 5:00 **General Discussion**

Film Forum and Scientific Motion Picture Program

PHILIP THOREK, M.D., F.A.C.S., F.I.C.S., CHAIRMAN

A Film Forum will be presented, in which four outstanding surgical motion pictures will be exhibited, with comments by the respective authors. There will be a general discussion and question *period open to any surgeon. All are invited to participate.*

TENTATIVE SURGICAL MOTION PICTURE PROGRAM

September 10 through 13, 1951

Philip Thorek, M.D., F.A.C.S., F.I.C.S., Chairman
Ankell M. Vaughn, M.D., F.A.C.S., F.I.C.S.
Jerome J. Moses, M.D., F.I.C.S.
Adolph M. Maller, M.D., A.I.C.S.

Subtotal Thyroidectomy for Primary Hyperthyroidism ....Frank Lahey

Complete Exenteration of the Pelvis....... . ... Alexander Brunschwig

Ureterosigmoid Anastomosis by Direct Elliptical Connection.............Reed M. Nesbit

Parotid Tumors.............Raymond McNealy

Splenorenal Anastomosis.....Louis M. Rousellot

Excision Anal Fissure, Fistulectomy and Hemorrhoidectomy ....Dean Swinton

Abdominoperineal Resection.....Richard Cattell

Coversion of the Auricular Appendage into a Leak-Proof Valve Tube for Intracardiac Surgery...................Samuel A. Thompson

Crushing Injuries to the Thorax.............. ....Howard K. Gray

''' Paron to Thorek

Surgical Resection of Thymic Tumors for Myasthenia Gravis..............Alfred Goldman

Esophageal Diverticulectomy ....Conrad J. Baumgartner

Surgical Approaches to the Knee Joint....... ....Veterans Administration (U.S.A.)

Surgical Treatment of Carotid Body Sensitivity in Man...U. S. Dept. of Pathology (Army)

Hernia of the Lung........Lawrence M. Shefts

Horseshoe Kidney................C. M. Stewart

Ligation of the Vena Cava and Ovarian Vessels for Suppurative Pelvic Thrombophlebitis... .... *Conrad Collins*

Uterine Cancer: The Problem of Early Diagnosis..............American Cancer Society

The Technic of Cholecystectomy.Kenneth Sawyer

Pyloromyotomy for Infantile Pyloric Stenosis ....John Madden

Coniotomy in the Treatment of Congenital Glaucoma ....Harold Scheie

Ulnar Nerve and Soft Tissue Defect Simultaneous Repair in the Forearm................ ....U. S. Army Dept. of Pathology

Cyst of the Urachus...........Norman O'Neill

Suprapubic Prostatectomy with Primary Bladder Closure................George Ewell and Harold Bruskewitz

Tantalum Cranioplasty Repair......Ralph Stuck

EDITOR'S NOTE: *Both the Assembly Program and the Motion Picture Program as here presented are in their preliminary form. Final programs will appear in the August issue of the Journ*

New Books

Lumbar Puncture and Spinal Analgesia. By R. R. Macintosh. Baltimore: Williams and Wilkins Company, 1951. Pp. 149, with 111 illustrations.

This book was written with four purposes in mind. First, as a guide for one who is setting out on his first lumbar puncture and use of spinal anesthetics; second, to disclose the essentials of the subject in order to prevent those who are tempted to administer spinal anesthetics from being led into difficulties by their lack of knowledge of the basic principles; third, to clear up certain obscure aspects of spinal analgesia, and fourth, because the illustrations have been recorded clearly and with decision, to help those who have no opportunity for dissecting this unfamiliar region.

The book is not confined strictly to practical aspects of lumbar puncture and spinal analgesia, it also includes a few academic points likely to interest those studying for examinations.

The illustrations, which, in the main, are original and diagramatic, disclose the exact structures involved in lumbar puncture. No extraneous structures are depicted. The subject material is up to date, and the reader is not burdened with controversial matter.

The book is printed in large type, which makes for easier reading. Though the volume is small, the material covered is entirely adequate. It is recommended not only for the beginner but as a general review for those who are well acquainted with the subject of spinal analgesia.

The Hebrew Medical Journal. Edited by Moses Einhorn. New York, Volume 1, 1951.

The appearance of the spring issue of The Hebrew Medical Journal (Harofé Haivri) inaugurates the twenty-fourth successful year of its publication under the editorship of Moses Einhorn, M.D. Written in Hebrew, with English summaries, the Journal is a contribution to the development of the Hebrew medical literature, and thus aids the newly established Hebrew University Medical School in Jerusalem.

In the medical section, among the articles of interest are: "Brain Tumors—Prognosis Based on Their Morphology," by Dr. Joseph H. Globus of Mt. Sinai Hospital; "The Modern Approach to the Management of the Failing Heart," by Dr. A. B. Rimmerman of Chicago, and "Modern Concepts in the Diagnosis and Treatment of Marital Infertility," by Dr. Abner I. Weisman of New York City.

Under the heading of "Israel and Health," Dr. Chaim Berlin discusses "Venereal Diseases in Israel," and "The Care of Deaf-Mutes in Israel" is presented by Dr. Mordecai Hexter.

In the section "Old Hebrew Medical Manuscripts" Dr. Zussmann Muntner of Jerusalem presents "Persion Medicine and Its Relation to Jewish and Other Medical Science—Commemorating the Millennium of Avicenna," and Dr. Leon Nemoy of Yale University writes on "Medical Material in the Code of Karaite Law of Elijah Bashyatchi."

The editorial office of this journal is located at 983 Park Avenue, New York 28, N. Y.

Light Therapy. By Richard Kovacs. Springfield, Ill.: Charles C. Thomas, Publisher, 1950. Pp. 112, with 28 illustrations. (A monograph in the series **American Lectures in Physical Medicine.**)

Physical therapy, especially in the forms of light and heat, is here presented briefly but comprehensively. The author points out that, in view of recent advances in knowledge and technic, not only the physiotherapist but the surgeon, the pediatrician, the internist, the dermatologist and many other special medical fields have need to keep abreast of current knowledge.

A condensed history of light therapy is provided as a background, after which there is a section on the physics of radiant energy. This is followed by chapters on infrared, luminous and ultraviolet radiation. Heliotherapy in general is examined as to technic and results.

The monograph is illustrated with photographs, charts and line drawings, with technical and statistical tables where there is need. Many of the photogra [illegible] raw-ings depict the necessary a [illegible] ften during use in the hospital [illegible] ium. Needless to say, this is an i [illegible] ddi-tion to such a work. In com [illegible] th a text of great clarity and [illegible], it makes for a presentation that will repay any reader's interest.

A Review of Medicine. By Benjamin Boshes. Chicago: Northwestern University Press, 1951. 6th ed. Pp. 814.

The faculty of the Northwestern University Medical School presents a new edition of this standard reference book to which six new chapters, four entire new sections have been added, and in which eleven new drugs or classes of drugs are discussed. The new chapters deal with tuberculosis, irradiation, psychosomatic medicine, war surgery, cancer, and the use of the antibiotics and sulfonamides; the new sections, with diseases of the liver, diseases of the blood vessels, gangrene and injuries to the spinal cord. The new drugs include the antihistaminics, the antibiotics, the sulfonamide compounds, the radioactive substances, thiouracil, tridione, phenurone, mesantoin, folic acid, nitrogen mustard and dicumarol.

The entire volume has been not only revised but rewritten. But the convenience of its arrangement is retained. Each entity is dealt with in synoptic style, giving the reader at once its definition, its cause (if known), its symptoms and signs, its diagnostic criteria, its treatment and its prognosis. This is one of the best-organized books of its kind now available to doctors.

Surgical Techniques—Thoracic Surgery, (*Techniche Chirurgiche — Chirurgia Toracica*). By Raffaele Paolucci di Valmaggiore. Bologna: Licinio Cappelli, 1950. Pp. 259; profusely illustrated.

This excellent volume by one of the outstanding contemporary surgeons, who is head of the Department of Surgery of the Royal University of Rome, Italy, Prof. Raffaele Paolucci, and his co-workers, is an excellent contribution to contemporary surgical literature. Those who know the versatility, brilliance and didactic abilities of Paolucci will delight in the possession of this volume, particularly those who read Italian. In fact, the work calls for translation into other languages.

The text opens with a discussion of the preparation of the patient for surgical procedures of the chest and modern methods of anesthesia for surgery of the thorax (Brancadoro). The subject of introthoracic cancer of the esophagus (Ruggieri), the indications for operation, the preparation of the patient, anesthesia and the various technics used in connection with this procedure are excellently described and adequately illustrated. This chapter is followed by a description of total gastrectomy by the transthoracic-transdiaphragmatic route (Marcozzi). The pattern of thoroughness exemplified in the preceding chapter is followed here, and is succeeded by a discussion of modern trends in the treatment of acute empyema (Fojanini) and echinococcosis of the lung (Bocchetti), followed by an excellent chapter on bronchoscopy and bronchial aspiration (Tosatti) and a supplementary chapter on bronchography (Giacobini). There is also a description of the technic of angiocardiography (Giacobini and Simonetti).

Special chapters are devoted to the treatment of the bronchial stump in pneumonectomy and lobectomy (*Fojanini*), to be concluded by a description of partial superior thoracoplasty and extrafascial apicolysis according to Semb's technic (Ruggieri).

A careful analysis of this fine work will impress one with its value and its clarity of presentation. Perhaps it would be well to point out that the statement of Brancadoro, crediting Evarts Graham of St. Louis with the first pneumonectomy, should be corrected. The first pneumonectomy was performed by Rudolph Nissen some years prior to Graham's report. Graham resorted to the technic described by Nissen. Except for this historical fact, the technical details are excellently presented and ably illustrated.

As a whole, the work exemplifies the masterly teachings of Paolucci and the training his assistants receive under his guidance. The work is particularly characterized by thoroughness, by statement of facts and by the elimination of verbosity. It will serve students, mature surgeons and specialists as a ready reference book, explaining modern aspects of surgery of the thorax, which is so rapidly coming to the fore. For a long time this was virtually a forbidden territory and it is still a fertile field for accomplishment and exploration.

Neomycin: Results of Clinical Use in Ten Cases. Duncan, G. G., Clancy, C. F., Wolgamot, J. R., and Beidleman, B., J.A.M.A. 145:75, 1951.

Neomycin, one of the newer antibiotics, is relatively thermostabile and is active against numerous grampositive and gramnegative organisms. It is active also against streptomycin-resistant organisms and has in vitro activity against different forms of Mycobacterium tuberculosis, in some cases showing greater activity than streptomycin. Waksman and Lechevalier are cited as emphasizing that before a new antimocrobial agent can be considered to have chemotherapeutic potentialities it must be less favorable to the development of resistance among organisms and less toxic and more potent, alone or in combination with other agents, than available antibiotic agents. Ten clinical cases are reported in which neomycin was used and in which these criteria were fulfilled. Each patient had a bacterial infection due to one or more pathogenic organisms which were completely or moderately resistant to penicillin, aureomycin, chloramphenicol and streptomycin, while all but one (a Pseudomonas) were sensitive to neomycin. It was markedly effective in eradicating sensitive organisms from the blood and urinary tract (for which latter system it was chiefly used) and significantly in no case in which the organism was eradicated did it return after cessation of therapy. Brief resumes of the ten cases are presented.

RAYMOND GREEN, M.D.

The Surgical Treatment of Duodenal, Gastric and Anastomotic Ulcer with Especial Reference to Vagus Resection. Trimble, I. R., and Lynn, D. H., International Abst. of Surg. 90:105-132, 1950.

In this beautifully prepared collective review the authors not only present the surgical treatment of duodenal, gastric and anastomotic ulcers but discuss in a concise fashion the innervation of the stomach and related viscera and their activities in digestion. The intrinsic and extrinsic nerve supply to the stomach, gallbladder and pancreas is presented in a clear, concise fashion, so that the reader is readily able to determine why vagus resection is often ineffectual. The physiology of the stomach and the effects of vagus resection upon it are described, as are the side effects upon the physiologic functions of the gallbladder and pancreas. The pronounced alterations in physiologic function of the stomach, gallbladder, pancreas, and small intestine produced by vagus resection are presented in some detail. The reduction in the flow of gastric juice and in the acidity of this juice is stressed.

The basis for vagus resection is the premise that chronic peptic ulcer is a systemic disturbance, the underlying mechanism being related to parasympathetic overbalance. This being the case, division of the vagus fibers, by releasing the stomach from neurogenic influences, should reduce the excessive secretory motor and vascular activities which are thought to cause the ulcertative process. The validity of this concept is challenged by many historical, anatomic, and physiologic observations. Exner performed vagus resection in 1907 for chronic peptic ulcer. After a period of popularity in Europe, the method was abandoned by 1925. The anatomic observation that parasympathetic impulses are on some occasions conveyed to the stomach over pathways other than the vagi would result in the failure of even a complete vagus resection to accomplish its objective. In addition, it has been demonstrated that gastric activities tend in time to return toward the normal level after vagus resection. This would indicate that the results of this operation may well be temporary. On physiologic grounds, one could not reasonably expect a vagus resection to promote healing in an ulcer that was not caused or related to parasympathetic overflow.

Summarizing the material presented in this exhaustive paper, the authors express the opinion that more time must elapse before a final conclusion as to the effectiveness of vagus resection can be drawn. On the basis of what is known at present the following conclusions appear to be warranted: 1. Resection of the vagus nerves has not proved to be the complete surgical remedy for duodenal, gastric and anastomotic ulcers, as was originally thought. 2. Vagus resection is more effective when supplemented by gastric drainage than when done as a single procedure. 3. Adequate gastric resection with removal of 70 to 80 per cent of the stomach, including the antral mucosa, appears to be the operation of choice. 4. Vagus resection, gastric drainage or both should be reserved *for patients for whom subtotal* gastrectomy is contraindicated.

The group for whom subtotal gastrectomy is contraindicated and for whom vagus resection with or without gastroenterostomy should be the procedure of choice consists of patients with the following conditions:

1. An anastomotic ulcer following extensive subtotal gastrectomy.
2. An adherent ulcer in the region of the ampulla of Vater when an exclusion operation is unsuitable.
3. An ulcer high on the lesser curvature for which more radical surgical treatment is not indicated.
4. A duodenal ulcer in a young, emotionally unstable person presenting a nutritional problem.
5. Partial gastrectomy and vagus resection in patients with recurrent massive gastroduodenal hemorrhage or a history of several episodes of acute perforation.

An extensive bibliography is included.

M. O. CANTOR, M D

Surgical Treatment of Varicocele. Alexander, R., Am. J. Surg. 2:330, 1950.

A brief outline of the gross anatomy encountered in varicocele is given. The pitfalls of varicocelectomy, such as hemorrhage, atrophy of testes, and hydrocele are said to have caused many urologists and surgeons to abandon the operation. Ivanissevich described the venous drainage system of the testes and recommended, some twenty years ago, high ligation of the internal spermatic vein as the treatment of choice for painful varicoceles. Later Javert and Clark advocated ligation of the internal spermatic vein for the cure of this entity.

When the circulation of the testes and surrounding regions is thoroughly understood, the logical operation is to relieve the backpressure caused by the anatomic weakness of the internal spermatic vein by high ligation of this vessel above the point of its anastamosis with the various components of the venous *system in the pampiniform* plexus.

An incision is made as *for* a herniorrhaphy, except that the length *rarely needs to* be more than 6 cm. unless a concurrent hernia is present. If an unsuspected hernia is encountered, extension of the incision will be necessary. The aponeurosis of the external oblique muscle is incised down to or *through the external inguinal ring,* being carried laterally to expose the abdominal inguinal ring. The cremasteric muscle and fascia are incised longitudinally at the proximal end of the inguinal canal, and the internal spermatic vein is dissected free for a distance of about 5 cm. The vein is securely ligated at the internal ring and at the distal portion of the dissection. The vein is excised between the ligatures, the proximal end being allowed to retract into the abdominal cavity. In some instances the internal spermatic vein is formed inside the abdominal inguinal ring and there are two branches instead of a single vein in the cord at the lateral end of the inguinal canal. Both veins are ligated in such cases.

Postoperatively the patient should wear a scrotal support for about one week. Bathroom privileges are allowed on the first postoperative day, followed by gradual ambulation. Hospitalization is rarely necessary after the fourth day, and the high incidence of postoperative complications is reduced. Herniorrhaphy is performed simultaneously if necessary.

J. U. REAVES, M.D.

Dolicho - Mega - Artery. *Leger, Lucien, and Cerbonnet, Georges, La Presse Medicale 58:951, 1950.*

This is the report of a case of dolicho-mega-artery. A tumor mass was observed in the right cervicolateral area and appeared to originate from a branch of the external carotid artery. Arteriographic studies failed to show any opacity, nor was there any suggestion of aneurysm. At operation the dilatation was observed to include the common carotid, the external carotid and the superior thyroid arteries. Histologic study revealed lesions of endarteritis sclerosis of the muscular coat and thickening of the adventitia. No inflammatory reaction was present. The loop of the thyroid artery only was resected, a surprisingly successful procedure. Two months later the arteriograph failed to reveal any opacity of the vessels.

In the author's opinion this case is a gous to that reported by Leriche in who gave the lesion its name. The cond is considered quite rare.

Surgical Complications of Congenital Anomalies of the Umbilical Region. Arnheim, E. E., Surg., Gynec. & Obst. 91 : 71-80, 1950.

The author describes the surgical treatment of two surgically complicated congenital anomalies of the umbilical region. Both patients were successfully treated, which indicates the advances made in surgical treatment and preoperative and postoperative care, since the mortality rate was formerly very high.

The first patient had a large omphalocele which had ruptured during delivery. As a result, a large mass of loops of reddened intestine lay on the abdominal wall, coming through a large opening in the sac of the omphalocele. Operation was performed two hours after delivery. At this time resection of the ileum and side-to-side anastomosis were necessary because of obstruction of the bowel caused by the large mass of a Meckel's diverticulum. The defect in the abdominal wall was closed. The infant was kept in an incubator supplied with oxygen. A Levine tube was inserted for gastroduodenal suction. Penicillin was given. A second operation was performed five days after the first for intestinal obstruction. The site of the anastomosis was observed to be dull and reddened. The ileum proximal to the anastomosis was dilated, whereas the portion distal to the anastomosis was collapsed. The anastomotic site was resected and a second side-to-side anastomosis performed. The patient made an uneventful recovery.

The second patient, 1 month old, presented a prolapse of the ileum through a patent omphalomesenteric duct. The ileum to each side and including the patent duct was excised. A side-to-side anastomosis was then done. The patient recovered uneventfully.

A brief but adequate review of the literature relative to each of these anomalies precedes the case report.

M. O. CANTOR, M.D.

Lipotropic Factors in the Treatment of Cirrhosis. Williams, J. O.: Cayer, D., and Cornatzer, W. E.: Southern M. J. 44:369, 1951.

The authors discuss a method for testing the function of the liver in the formation of phospholipids. By means of repeated needle biopsies of the liver and measurements of phospholipids entering the blood stream through the liver with the use of radioactive p^{32} they have investigated the relation between fatty infiltration of the liver and a deficiency of lipotropic factors; also, the effect of treatment with lipotropic factors on the rate of phospholipid turnover and the correlation of phospholipid turnover with the amount of neutral fat in the liver.

Twenty patients with evidence of advanced hepatic disease were studied. Seventeen were male and 3 female; the youngest was 10 years old and the oldest 56. On admission, 8 were jaundiced and 11 had ascites. All had palpable spleens.

The authors' results showed that the use of radioactive phosphorus and serial needle biopsies provides a means of studying the effects of lipotropic agents on phospholipid turnover and on the removal of neutral fat from the liver. In patients with fatty infiltration of the liver the rate of phospholipid turnover after a large dose of choline or methionine is significantly higher at the onset of treatment than it is two months later, when clinical improvement has taken place and the amount of fat in the liver has decreased. In cases of hepatomegaly with necrosis and scarring without fat, the rate of phospholipid turnover is not increased after the large dose of lipotropic material.

HOWARD S. STERN, M.D.

Telescopic Pancreaticojejunostomy. Binkley, J. S.: Cancer 4:226, 1951.

The author describes a single case of carcinoma of the head of the pancreas in which internal pancreatic drainage was successfully established by means of an ingeniously devised "telescopic" end-to-end pancreaticojejunostomy.

He states logically that preservation of pancreatic drainage into the jejunum offers the patient his best chance to regain nutritional and metabolic balance, particularly if done proximal to the other hook-ups. In the presence of malignant lesions of the pancreas only time will tell whether anything less than total pancreatectomy is justified.

For in benign lesions of the pancreas and carcinoma of the ampulla of Vater, partial pancreatectomy is the procedure of choice, combined with a safe intestinal implantation of the pancreatic stump.

This article provides a concentrated review of this entire problem and describes in detail the author's technic of telescopic end-to-end pancreaticojejunostomy.

THOMAS WILENSKY, M.D.

A Rational Approach to Cancer of the Stomach. Donald, James, and Donald, John: J. Med. Assoc. Alabama 20:348, 1951.

The poor results of therapy for cancer of the stomach are due in a large measure to extreme difficulty in making an early diagnosis and to failure of the surgeon to be sufficiently radical. In order to make the diagnosis earlier one must suspect cancer of the stomach in any patient with vague indigestion who is over 40 years of age. Such a patient demands prompt and thorough fluroscopic and roentgen examination of the stomach. A gastric examination by a self-appointed roentgenologist with outmoded equipment cannot be expected to approach the 95 per cent average of the good roentgenologist. Study of gastric acidity, gastroscopic investigation and Papanicoleau study of secretions may afford added academic precision as to whether the lesion is malignant.

The second factor of greatest importance in early diagnosis is the attitude of the profession toward gastric ulcer. Every gastric ulcer must be considered cancer until proved otherwise. Often the roentgenologist, the gastroscopist and even the pathologist with the lesion in his hand cannot differentiate them. One cannot afford to temporize with patients in whom gastric ulcers develop after the age of 40. Gastric resection should be advised as soon as the diagnosis is made. This attitude is not radical; with subtotal gastrectomy the mortality rate should not exceed 1 per cent, and the operation is not crippling. The probability of excellent health is greater than 80 per cent, and the likelihood of recurrent ulceration is not greater than 1 per cent.

Two anatomic and pathologic considerations are important. These are the distribution of regional lymph nodes and the tendency for cancer to extend intramurally beyond the gross tumor. The regional nodes usually receive metastases of cancer of the stomach. Involvement of a node by cancer cannot be excluded grossly. Limited resection has no place in the curative treatment of cancer of the stomach.

The mortality of total gastrectomy does not exceed 10 per cent. If total gastrectomy shows a substantial increase in the chance of cure, any rational patient will happily accept some physiologic disturbance. The physiologic disturbance is not incompatible with a comfortable, productive life.

A. H. LETTON, M.D.

Appraisal of Vagotomy for Peptic Ulcer After Seven Years. Dragstedt, L. R., and Woodward, E.: J.A.M.A. 145:795, 1951.

The authors present a detailed and complete discussion of the late results of an operation devised by the senior author. In a series of 509 vagotomies, which were followed up for periods up to seven years, their conclusions are as follows:

"1. Complete vagotomy by a transabdominal, transdiaphragmatic approach, combined with a gastroenterostomy of small size, is a relatively safe, efficient and practical method of surgical treatment and should replace subtotal gastrectomy as the initial, definitive surgical treatment for duodenal, gastrojejunal and certain esophageal ulcers.

2. The complications of vagotomy operations for peptic ulcer are chiefly due to motor disturbances in the stomach, are for the most part trivial and self limited and can be controlled or eliminated entirely by gastroenterostomy and adequate postoperative decompression of the stomach.

3. Persistence, or recurrence, of duodenal or gastrojejunal ulcer is almost invariably due to incomplete vagotomy as evidenced by physiological tests.

4. Deviation of the alkaline juices of the duodenum away from the region of the anastomosis by enteroenterostomy in association with gastroenterostomy for duodenal ulcer is a mistake and can be expected to lead to the development of a stoma ulcer in spite of a complete vagotomy.

5. The data of this study support the concept of duodenal ulcer as of psychosomatic or nervous origin."

HOWARD S. STERN, M.D.

Colonic Replacement of the Stomach. Moroney, J.: Lancet 1:993-993, 1951.

In an effort to restore the food canal to continuity after partial gastrectomy and to provide a gastric storage mechanism, the author has devised an interesting method. A free loop of transverse colon is anastomosed to the duodenum on the one side and the lower end of the cut stomach on the other.

Twenty-two patients were subjected to this operative procedure without a death. Twenty of these patients were operated upon because of paptic ulcer and 2 because of postgastrectomy vomiting.

The longest postoperative follow-up period was five months.

M. O. CANTOR, M.D.

Gas Cysts of the Intestines. Dale, A. W., and Pearse, H. E., Surg., Gynec. & Obst. S.G.&O. 90:215, 1950.

Gas cysts of the intestines (pneumatosis intestinalis, emphysematosis, pneumatosis cystoides intestinorum, etc.) are relatively rare in man. Dale and Pearse of Rochester, New York, report 2 additional cases.

The cause of gas cysts in the intestines is obscure. Bacterial and neoplastic factors have been suggested but is improbable. It may be that gas is mechanically forced from the intestinal tract into the bowel wall and adjacent tissues through the lymphatics, as many of these cases have a mechanical factor. The disease is not uncommon in pigs with a dietary deficiency. In cases of intestinal obstruction the patients are often malnourished. It appears probable that the deficiency state is related to the development of the cysts in man.

Microscopically the cysts appear as empty spaces surrounded by a wall consisting either of connective tissues or of endothelium-like cell lining. Multinucleated giant cells may lie in the wall as well as nearby. Acute inflammatory cells and small round cell infiltration and fibrosis of the wall have been noted.

Gas cysts are often observed incidently at autopsy or at operation for pyloric stenosis. One case has been reported in which a palpable abdominal mass proved to consist of an inflamed gas cyst rather than a tumor. Relief of the underlying cause of the cyst has usually been the primary purpose of operation. Resection should be reserved for an occasional case in which evidence of inflammation or adhesions is present and in which intestinal obstruction may occur later. It is impractical to attempt local treatment of the cysts, as they may be tiny and there may be thousands.

The first case reported is that of a patient with pyloric stenosis, secondary to chronic peptic ulceration. A posterior gastrojejunostomy was performed to relieve the obstruction. The sèrosa of the terminal portion of the ileum was infiltrated by many gas cysts. This was resected and the continuity reestablished by end-to-end anastomosis.

The second case is that of a white man aged 35; an inoperable adenocarcinoma of the stomach was found on laparotomy. This patient died five weeks after the operation and at autopsy showed carcinoma of the stomach with metastases to the regional lymph nodes, gallbladder, liver, lungs, left adrenal gland and retroperitoneal lymph nodes. Throughout the jejunum and all but the terminal parts of the ileum gas cysts gave the small bowel a marked foamy, emphysematous mucosal pattern.

H. J. ROSEVEAR, M.D.

Duration of Life in Untreated Cancer. Shimkin, M.: Cancer 1:1, 1951.

The ultimate result in the treatment of cancer is the permanent eradication of the neoplastic growth and recovery of the patient. When a cure is not possible, the goal is retardation of the growth and prolongation of useful and comfortable life. For proper evaluation of the latter type of treatment it is important to understand the behavior of cancer of various organs in the untreated patient. The author presents a study which presents data on patients with untreated cancer of various organs in an attempt to determine the duration of life from clinical onset to death.

This material was accumulated from case histories, medical records and death records. The shortest period of survival was associated with esophageal lesions, with 50 per cent of the patients being dead after seven months; the longest was associated with cancer of the breast, with 50 per cent dead after twenty-six months. The list, in order of duration of life from onset to death (longest first) follows: breast, rectum, cervix, oral, stomach, larynx and esophagus.

Spontaneous regressions occur particularly in cases of lymphoma, the incidence being as high as 10 per cent. A few complete regressions are cited. Several instances of long-term recrudescence are also noted. These data emphasize the extreme care that must be exercised in the evaluation of the effect of therapy.

A. H. LETTON, M.D.

In Memoriam

CHARLES CLAY REED, JR.
M.D., F.A.C.S., F.I.C.S.

Dr. Charles Clay Reed, Jr., 42, a surgeon of Little Rock, Arkansas, died at Little Rock hospital on Jan. 5, 1951, after a long illness. Dr. Reed was graduated from the University of Arkansas Medical School in 1933 and served his internship at St. Vincent's Infirmary. His Little Rock practice was begun by an association with Dr. Dewell Gann, with whom he worked until Dr. Gann retired. He was later associated with his father, Dr. C. C. Reed, Sr. until the latter's death several years ago. Dr. Reed was connected in his work with the Baptist State Hospital and St. Vincent's Infirmary. Until entering the army Dr. Reed was deputy coroner for Pulaski County. During the war he was a troopship surgeon.

Dr. Reed was a member of the American Medical Association, the Pulaski County and Arkansas Medical Societies, the American College of Surgeons and the International College of Surgeons.

WILLIAM RICHARD ABBOTT
M.D., F.A.C.S., F.I.C.S.

On March 19, 1951, Dr. William Richard Abbott of Idaho Falls, Idaho, died at the age of 48. Dr. Abbott took his academic college training at the University of Utah and his medical degree from Rush Medical College of the University of Chicago. He served a one-year rotating internship at the Garfield Park Hospital in Chicago. Dr. Abbott was a member of the major staff of the Sacred Heart Hospital and a member of the general staff of the Latter Day Saints Hospital, both in Idaho Falls, Idaho. Dr. Abbott's practice was devoted entirely to general surgery.

In addition to holding a fellowship in the International College of Surgeons, Dr. Abbott was a member of the American Medical Association, the Idaho Falls Medical Society, the Idaho State Medical Society and the American College of Surgeons.

T. E. M. KALIMA
M.D., F.I.C.S. (Hon.)

On May 27, 1951, Dr. Tauno Emil Mikael Kalima, Emeritus Professor of Surgery of the University of Helsinki and President of the Finnish Chapter of the International College of Surgeons, died at the age of 69. A graduate of Helsinki University, Dr. Kalima was assistant to Prof. Ali Krogius from 1912 to 1915. From 1915 to 1928 he was Associate Surgeon at the District Hospital of Turku. Beginning in 1929, he was Professor of Surgery at the University of Helsinki until 1948. His practice was devoted to general surgery, in which field he was many times honored for his achievements.

The distinction of such a man as Professor Kalima, however, is by no means confined to

Prof. T. E. M. Kalima

his professional powers. By all who knew him he was respected and honored for his essential humanity and the quality of his friendship. Even those who knew him only by correspondence were deeply impressed by his kindliness and by the incorruptible concepts upon which his life was based. In Professor Kalima the International College of Surgeons has lost a valuable member, whose wholehearted support of the principles it believes in was always forthcoming, whatever personal inconvenience it entailed.

Professor Kalima was an Honorary Member of the Finnish Surgical Association. He was also a member of the Finnish Medical Society Duodecim, the Nordic Surgical Association, the Nordic Orthopaedic Association, the Deutsche Gesellschaft für Chirurgie, and the Association Francaise de Chirurgie. He was an Honorary Fellow and a member of the Board of Trustees of the International College of Surgeons. There is not one of these groups but will feel his loss. To his bereaved family, friends and colleagues, not only in Finland but wherever his name was known, the College and its *Journal* extend their warmest sympathy.

CHARLES MORTIMER ROBBINS

M.D., F.A.C.S., F.I.C.S.

Dr. Charles Mortimer Robbins, 59, of Newark, New Jersey, passed away on April 4, 1951. Born in Lithuania, Dr. Robbins received his medical education at New York University and the Bellevue Medical College. He took short postgraduate courses in Germany, Vienna and Paris, and served his hospital internship at the Newark Beth Israel Hospital, with which he was later associated with as visiting surgeon. For a short period during the war he served in the United States Army as a lieutenant colonel. His practice was devoted entirely to general surgery.

Dr. Robbins was a member of the following medical societies: the American Medical Association, the New Jersey State Society of Surgeons, the American Board of Surgery (founder member), the Academy of Medicine of Northern New Jersey (past president), the American College of Surgeons and the International College of Surgeons.

ROY FERDINAND RAITER

M.D., F.A.C.S., F.I.C.S.

On September 23, 1950, Dr. Roy Ferdinand Raiter, aged 53, died at Cloquet, Minnesota. A graduate of the Northwestern University Medical School, Dr. Raiter studied also at several clinics in Vienna, at the University of Vienna and at Harvard University. His hospital internship was served at the Cincinnati General Hospital. Dr. Raiter was chief surgeon at the Fond du Lac Government Hospital and the Raiter Hospital, both in Cloquet, Minnesota. He was also a member of the staff of St. Mary's Hospital, and St. Luke's Hospital, both in Duluth.

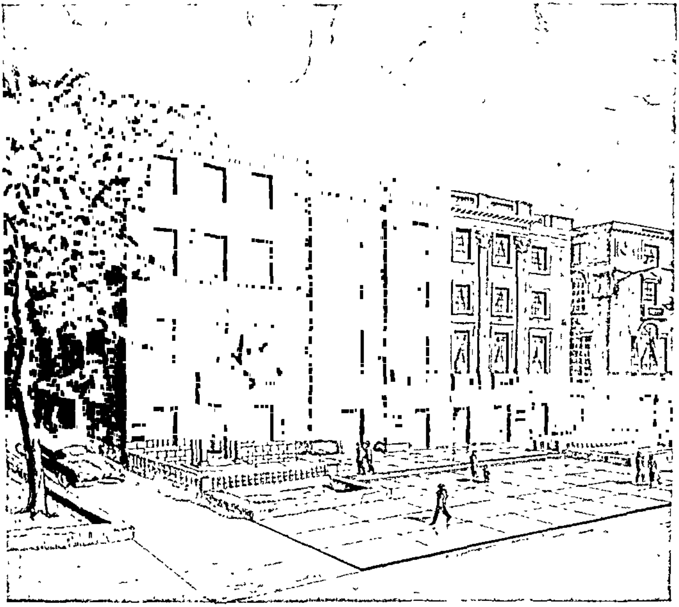
Dr. Raiter was a member of the American Medical Association, the Minnesota Surgical Society, the Minnesota State Medical Society, the Duluth Surgical Society, the American College of Surgeons and the International College of Surgeons. The officers and members of the International College extend their warmest sympathy to the bereaved.

BERTRAM JAMES MILES

M.D., A.I.C.S.

Dr. Bertram James Miles, Wilkinsburg, Pennsylvania, died on March 15, 1951, at the age of 41. A graduate of the University of Pittsburgh School of Medicine. Dr. Miles served his hospital internship at the Pittsburgh Medical Center. His post graduate work was done over an extended period at the Columbia Hospital, Wilkinsburg, Pennsylvania; Cornell University, New York City; the University of Pittsburgh School of Medicine, and the Cook County Graduate School of Medicine. Dr. Miles was affiliated with the Columbia Hospital as associate surgeon and with the Braddock General Hospital (Braddock, Pennsylvania) on the courtesy surgical staff.

Dr. Miles was a member of the American Medical Association, the Pennsylvania State Medical Society, the Alleghany County Medical Society and the International College of Surgeons.



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4. Any change in a wart or mole
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6. Persistent hoarseness or cough
7. Any change in normal bowel habits

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Original Articles

Primary Carcinoma of the Ureter

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CHICAGO

PRIMARY carcinoma of the ureter was originally described by Rayer[1] in 1841. Blix[2] reported the first authentic case with a microscopic diagnosis in 1878. Davy[3] in 1844 reported the first case of carcinoma of the ureter in the English language. Only 8 cases were reported prior to 1900, in all of which the diagnosis was made at autopsy. Albarran[4] is credited with recording, in 1902, the first instance of a correct preoperative diagnosis. During the following twenty years occasional cases of carcinoma of the ureter were reported by different writers. Judd and Struthers[5] reported the first case from the Mayo Clinic in 1912. Meeker and McCarthy[6] reported 33 cases, and two years later Kretschmer[7] reviewed the subject and found only 36 cases, including his own. Rousselot and Lamon[8] in 1930 found 49 cases in the literature and added 1 of their own. Four years later Scott[9] presented 2 cases and found 59 other acceptable cases in the literature. During the next decade excellent and thorough reviews of the literature on this subject were presented by Shillings,[10] Bergendahl,[11] Rusche and Bacon,[12] Foord and Ferrier,[13] Scott,[14] and Lazarus and Marks.[15] A total of 183 cases of primary carcinoma of the ureter appeared in the literature up to 1945.

It is an interesting fact that two-thirds of all the cases were reported during the previous decade. This can be attributed to the marked advance in diagnostic technic resulting from the continuous improvement of urologic instruments in the hands of an increasing number of men who are especially trained in urologic diagnosis. The trend toward more frequent and more complete autopsies has definitely increased the number of cases in the literature.

Since the last complete review of this subject by Lazarus and Marks in 1945, 70 cases have been reported in the literature by 29 different authors and their associates.[16] To these, the 7 cases presented below are added, bringing the total to 260 cases of primary carcinoma of the ureter available for study. The correct preoperative diagnosis in th tter g

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was made in only 60 per cent of the cases. Although this is a higher percentage of correct preoperative diagnosis than that in the former group (39.3 per cent), there is still much room for improvement.

REPORT OF CASES

CASE 1.—A 59-year-old white steamfitter entered Cook County Hospital in March 1946, complaining of hematuria of one month's duration. He stated that he had always been in good health until he noticed "bloody urine", which was painless and present at all voidings. Physical examination revealed no abnormality, and the laboratory data, with the exception of macroscopic and microscopic red blood cells in the urine, were within normal limits. Cystoscopic examination revealed an efflux of bloody urine from the left ureteral orifice. Ureteral catheters were passed, the right to the renal pelvis and the left to a distance of 10 cm., at which point definite obstruction was met. Indigo carmine appeared from the right side in three and one-half minutes and from the left side in thirteen minutes. A bilateral pyelogram showed a normal right kidney, but on the left side the ureteral catheter buckled on itself at the point of obstruction. A second cystoscopic study revealed clear urine coming from both ureteral orifices. A No. 4 ureteral catheter was passed with difficulty beyond the point of obstruction. The left pyelogram was inconclusive, as the calyces were not sufficiently filled to permit a definite diagnosis. Intravenous pyelographic study was of very little value. Cystoscopy was again performed, and clear urine was seen coming from both ureteral orifices. A ureteral catheter again met definite obstruction about 10 cm. up the left ureter. The roentgenologist's report at this time was "ureteral calculus at the point of obstruction" (Fig. 1).

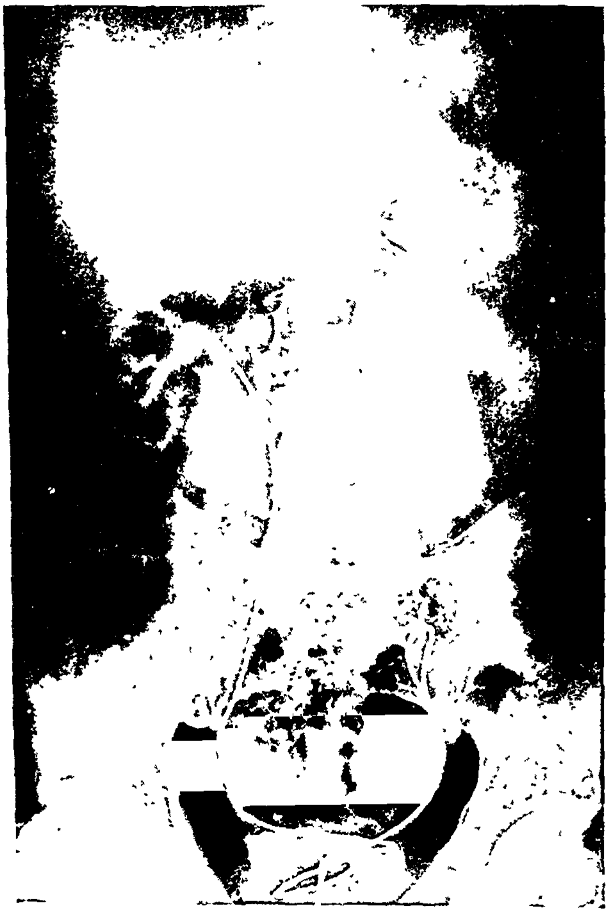
Fig. 1 (Case 1).—Pyelogram showing buckling of ureteral catheter at point of obstruction.

At operation, through a left rectus incision, a firm rounded mass was seen directly over the bifurcation of the iliac vessels, which was fixed to the surrounding structures. A frozen section revealed "metastases of a very anaplastic transitional cell carcinoma." The ureter was freed close to the bladder and removed. The wound was drained and closed, and a left nephrectomy was done at the same time. The pathologist reported "a normal left kidney" and "an infiltrating transitional cell carcinoma of the ureter, grade III." The patient made an uneventful recovery and left the hospital (Figs. 2 and 3).

Ten weeks later the patient was readmitted to the medical ward. He died three days later of bilateral pulmonary metastases (Fig. 4).

CASE 2.—A patient was transferred from the medical service of Cook County Hospital for diagnosis and treatment of a mass in the right upper quadrant of the abdomen. The past history revealed only gastrointestinal complaints (indigestion) and several episodes of gastric bleeding. The bleeding was due to a peptic ulcer which was adequately controlled before transfer.

Physical examination revealed a 65-year-old white man not acutely ill. The mass in the right upper quadrant was smooth, movable and not tender. Urine, blood counts, and blood chemical values were within normal limits except for occasional microscopic red and white cells. Cystoscopic examination gave negative results except for definite obstruction to a ureteral catheter about 12 cm. up the right ureter. A second and a third attempt failed to pass the ureteral catheter up the right ureter to the renal pelvis. The left ureter and kidney were normal on an intravenous pyelogram. A right retrograde pyelogram and ureterogram showed the ureteral catheter at the inferior sacroiliac junction. After the injection of dye the bladder was visualized, but no dye was noted in the kidney pelvis or the ureter.

The preoperative diagnosis was ureteral occlusion due to a nonopaque calculus or stricture. Tumor of the ureter was considered, although no bloody drip was ever observed to come from a ureteral catheter. In fact, no drainage was ever obtained from the right ureter.

Operation consisted of a right nephrectomy. By the use of tension on the removed kidney, the ureter was isolated to the bladder. Immediately below the brim of the pelvis a fusiform swelling was noted, extending for about 2 cm. Below this point the ureter was of normal caliber. The ureter was clamped in the juxtavesical portion and divided below the clamp. The kidney and ureter were delivered from the wound, still distended with contained fluid and tumor. The wound was drained and closed in layers. The patient made an uneventful recovery and was discharged from the hospital.

Pathologic study of the specimen revealed, grossly, the hydronephrotic shell of a kidney with a hydroureter which was normal except for the lowest 4 cm., but at about this point the ureter was occluded by a polypoid greyish white mass. Microscopic section of the tumor revealed transitional cell proliferation, with metaplasia to the squamous epithelium (Figs. 5, 6 and 7).

Case 3.—A 57-year-old white man entered St. Luke's Hospital (Dr. W. J. Baker's service) complaining of intermittent hematuria of seven months' duration. Laboratory data were normal except that urinanalysis showed many red blood cells and a 4 plus reaction for albumin. Cystoscopic study revealed a normal bladder. Both ureters were catheterized, and no obstruction was met. A hydronephrotic flow came from the left side; about 110 cc. of light urine was aspirated. Dye appeared from the left ureteral catheter in seven minutes and was of excellent concentration; in twelve minutes it appeared from the right catheter in poor concentration. The pyelogram revealed marked left hydronephrosis and hydroureter to the level of the sacrum. The preoperative diagnosis was hydronephrosis of unknown cause. A nephroureterectomy was done, and the patient had an uneventful recovery and left the hospital three weeks after admission. The pathologic diagnosis was papillary carcinoma of the ureter.

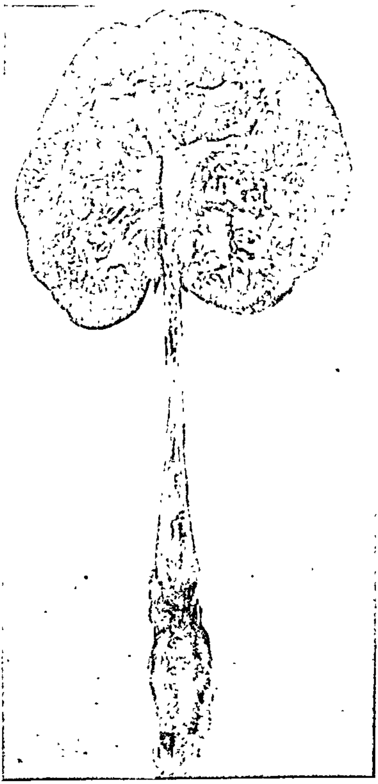
Fig. 2 (Case 1).—Gross specimen, showing ureteral tumor.

One year later the patient was admitted to the Cook County Hospital, complaining of low back pain for the past three months. A flat plate revealed evidence of metastasis in the fourth lumbar vertebra and the right sacro-

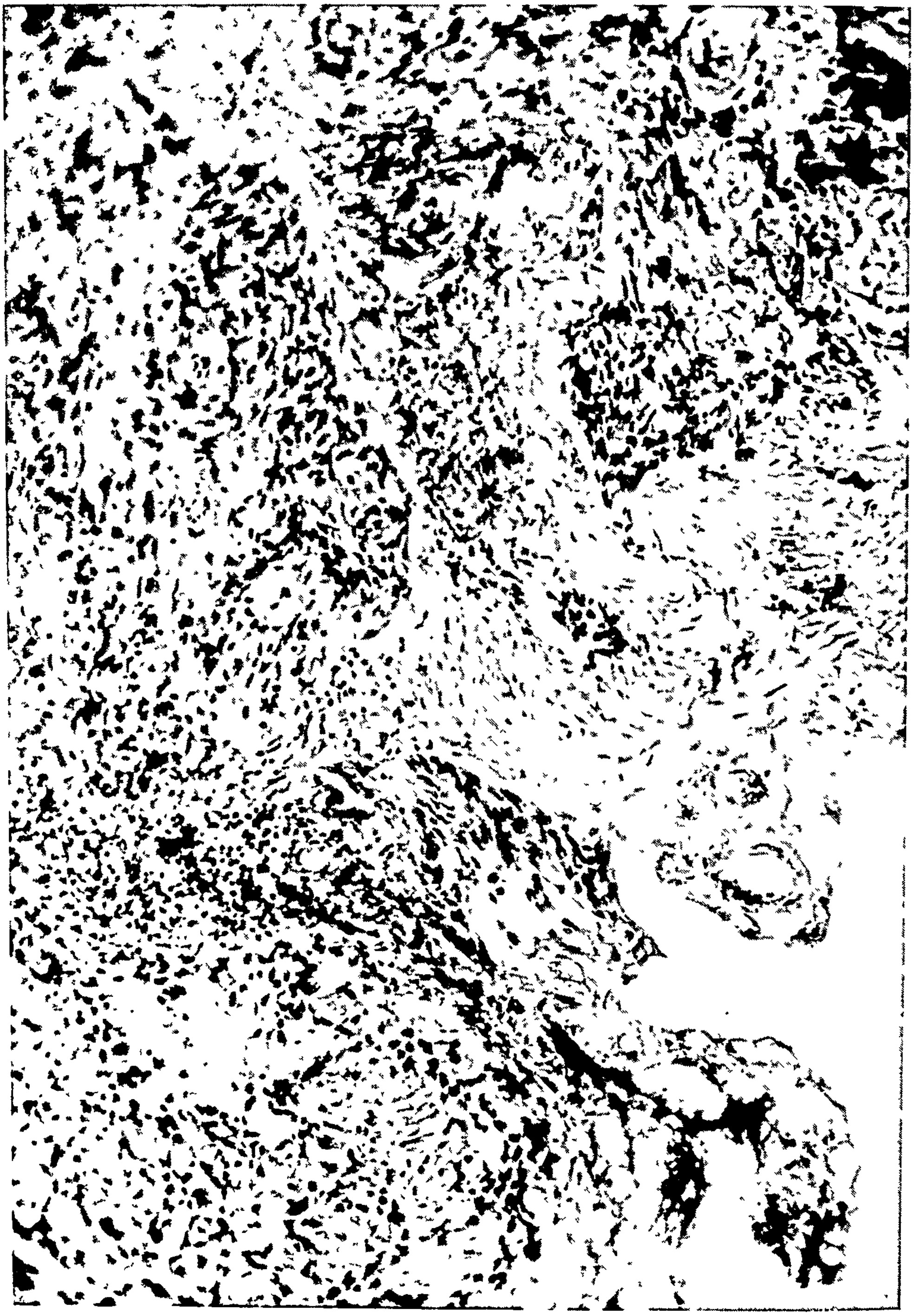

Fig. 3 (Case 1).—High power microscopic section, showing infiltrating transitional cell carcinoma of ureter.

iliac joint. High voltage roentgen therapy was administered, with some relief of pain. The patient was removed from the hospital to a farm, where he died three months later (Figs. 8, 9 and 10).

CASE 4.—A 69-year-old Chinaman entered the Cook County Hospital complaining of pain in the back, loss of 40 pounds (18 Kg.) in weight during four months and difficulty in urination. Physical examination revealed him to be markedly emaciated. The bladder was distended. Rectal examination showed an enlarged, firm, smooth prostate. The course was downhill, with an elevated temperature (102.6F). The patient became stuporous and died twelve days after admission. At autopsy a tumor was present in the middle third of the ureter which, microscopically, showed a transitional cell carcinoma (Fig. 11).

CASE 5.—An 85-year-old white woman was admitted to the Cook County Hospital in coma The history revealed that she had been in fairly good health until two days before her admission, when she became extremely restless and uncontrollable. She died two and one-half hours later. Autopsy revealed marked left renal hydronephrosis and a tumor at the ureterovesical junction. Microscopic examination revealed a transitional cell carcinoma (Fig. 12).

CASE 6.—A white man, aged 55, entered the Cook County Hospital Dec. 16, 1940. He stated that he had had dyspnea for the past year, of gradually increasing severity. He had lost about 30 pounds (13.6 Kg.) during this time. He did not appear acutely ill. Laboratory data were within normal limits. There was a systolic murmur over the apex, and areas of dullness were present over both lung bases. The patient became progressively worse, and in spite of supportive measures died five days after admission. At autopsy a papillary carcinoma was observed in the middle third of the right ureter.

CASE 7.—A 74-year-old man entered the Cook County Hospital on Jan. 15, 1950, complaining of pain in the stomach and constipation of two weeks' duration. An episode of hematemesis had occurred two weeks before, and for two days he had had frequent vomiting spells, the vomitus including all ingested food and liquid. The abdominal pain was described as cramping and intermittent. A clinical diagnosis of carcinoma of the stomach was made. The laboratory data were within normal limits except for secondary anemia and elevated blood chemical levels. Treatment consisted of an oil and enema routine, Levine gastric suction and the administration of intravenous fluids. Roentgen examination revealed a small calcified density to the right of the third lumbar vertebra which was thought to be a ureteral stone. The hospital course was progressively downhill, and the patient died four days after admission. Autopsy revealed marked right hydronephrosis and an encircling tumor mass in the midportion of the right ureter. It was composed of greyish yellow tissue and extended into the periureteral tissues. Metastases to the right kidney, liver and lungs were observed. Microscopic examination revealed a transitional cell carcinoma of the midportion of the right ureter (Fig. 13).

CLINICAL, DIAGNOSTIC AND PATHOLOGIC FEATURES

Frequent reference will be made to the studies and compilations of the aforementioned writers in the following discussion.

Incidence.—Renner[17] (1931) found 3 cases of primary carcinoma of the ureter in 13,854 autopsies in five years at the Vienna Pathological Institute. Colston[18] (1933) found 2 cases in 22,000 urologic

Fig. 4 (Case 1).—Pulmonary metas

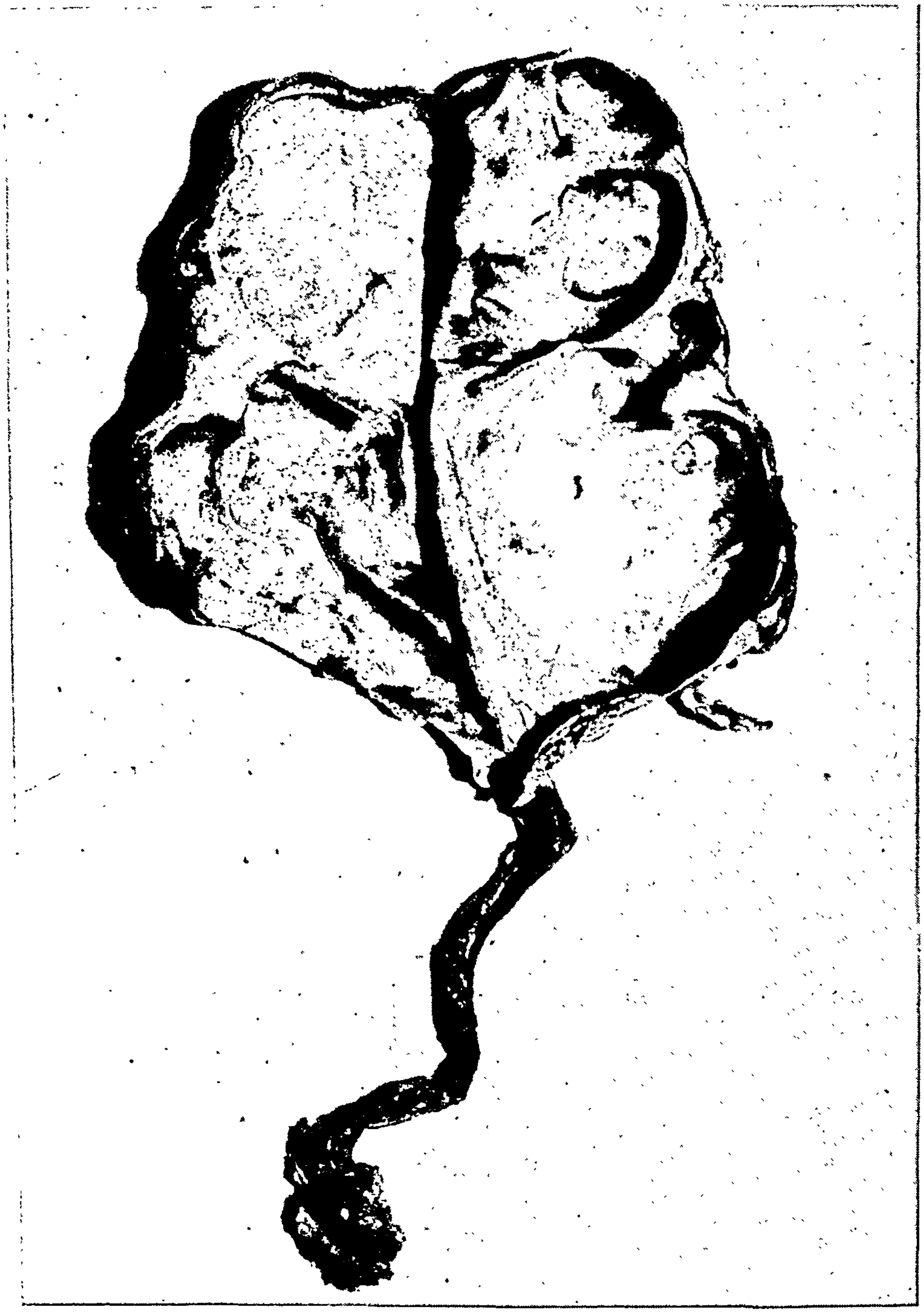

Fig. 5 (Case 2).—Gross specimen, showing marked hydronephrosis and ureteral tumor.

admissions at the Johns Hopkins Hospital. Jaffe and Mandillo[19] reported 2 cases in 90,000 routine admissions to the Grace Hospital, where 1,900 of these were for primary neoplasms in various locations. Gilbert[20] reported only 1 instance of a primary carcinoma of the ureter in 22,810 autopsies performed in Bellevue Hospital between 1904 and 1935. In 26,410 autopsies performed at Cook County Hospital since 1930, 4 cases of primary carcinoma of the ureter were found.

Age of Patients.—The youngest patient reported on was a 22-year-old woman; the oldest, an 89-year-old man. The tumor occurs most frequently in the sixth and seventh decades of life.

Sex of Patients.—Male patients are affected twice as frequently as female.

Location of Growth.—The lower third of the ureter was the site of the tumor in over 50 per cent of the cases. The right ureter was involved more frequently than the left.

Symptoms.—Because of the concealed position of the tumor, the onset is usually insidious and the growth may be extensive and may have even metastasized before any symptoms develop. However, hematuria, pain and a palpable tumor mass constitute the characteristic triad of symptoms suggestive of this condition. Cases have been reported in which one or more of these symptoms was absent.

Hematuria is the outstanding symptom of primary carcinoma of the ureter and was present in over 70 per cent of the reported cases. It may be profuse or microscopic and may occur early or late in the course of the disease. It may be recurrent or constant. It usually is painless, although colic may occur as the result of the passage of blood clots down the ureter. Cases have been reported in which hematuria is absent. This type of bleeding differs in no way from bleeding originating in a renal tumor and can easily be confused with such bleeding.

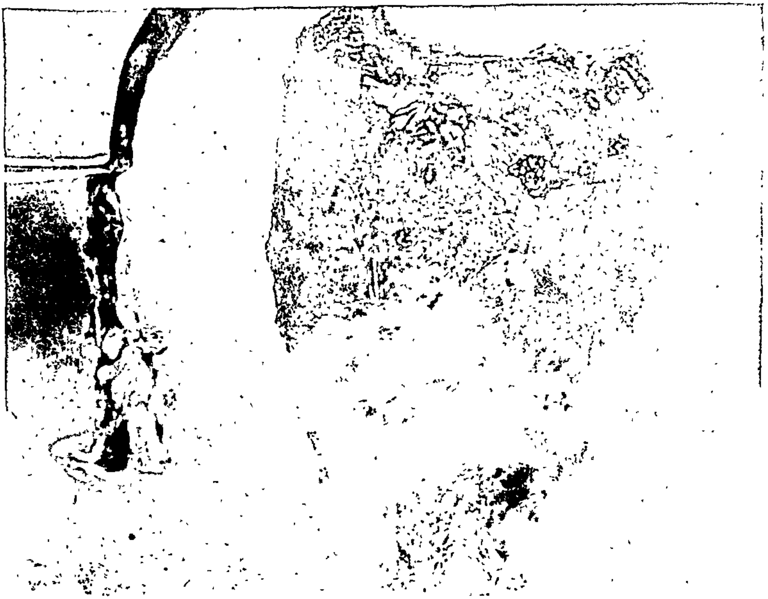

Fig. 6 (Case 2).—Gross specimen, showing papillary ureteral tumor.

TABLE 1.—*Diagnosis*

	No. of Cases to 1945	No. of Cases since 1945	Total
Conditions diagnosed as ureteral tumors	72	42	114
Conditions diagnosed as probable ureteral tumors	14	1	15
Conditions diagnosed as tumor of genitourinary tract other than ureteral	12	7	19
Miscellaneous diagnoses	30	15	45
Cases in which no preoperative diagnoses were made	45	5	50

TABLE 2.—*Types of Tumors Reported*

Type of Growth	Number		Total
	To 1945	Since 1945	
Papillary carcinoma	88	43	131
Squamous cell carcinoma	23	9	32
Medullary carcinoma	8		8
Malignant papilloma	6		6
Carcinoma, grade 2	6	4	10
Carcinoma, grade 3	6		6
Carcinoma (type not mentioned)	5	5	10
Carcinoma, grade 4	5	2	7
Adenocarcinoma	4	2	6
Carcinoma simplex	4		4
Epithelioma	3	1	4
Solid carcinoma	3		3
Carcinoma, low malignancy	2		2
Mixed papillary and alveolar carcinoma	1	.	1
Mixed papillary carcinoma and carcinosarcoma	1		1
Mixed papillary carcinoma and adenocarcinoma	1	..	1
Transitional cell carcinoma	1	7	8
Basal cell carcinoma	1	..	1
Epidermoid carcinoma	1	.	1
Cylindrical cell carcinoma	1		1
Anaplastic carcinoma	1	1	2
Carcinoma, grade 1	1	3	4

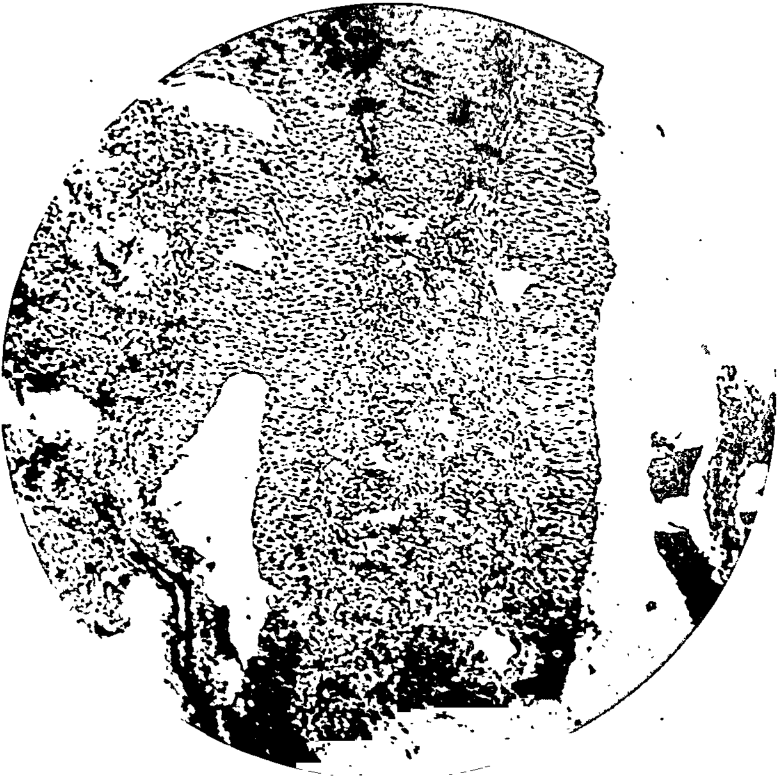

Fig. 7 (Case 2).—High power microscopic section of ureteral tumor, showing transitional cell carcinoma.

Pain was present in about 60 per cent of cases. Pain may be due to ureteral obstruction from tumor or blood clot, or to involvement of nearby or remote organs by metastasis or extension. Pain due to obstruction is much more frequent and is characteristically a dull ache in the renal region. Pain resulting from extension to pelvic or abdominal organs is usually diffusely distributed, constant and frequently severe. Pain resulting from metastases to the hip, pelvic bones or lumbar vertebrae is constant and sometimes lancinating, similar to that which results from involvement of the same structures by metastases from carcinoma of the prostate.

Tumor was palpable in about 40 per cent of the cases reported. In the majority of cases the mass felt was an enlarged hydronephrotic kidney, the hydronephrosis being secondary to obstruction by tumor. Cases have been mentioned in which the ureteral tumor was palpated abdominally, vaginally or rectally. Symptoms less frequently observed were frequency of urination, dysuria, loss of weight, loss of appetite, nausea, vomiting and, in some cases of infection, chills and fever. One or more of the aforementioned symptoms had been present from one to two years in nearly 45 per cent of the reported cases.

The *diagnosis* of primary carcinoma of the ureter in an early stage of development is very difficult. A survey of the literature reveals that a correct preoperative diagnosis of primary carcinoma of the ureter was made in 39.3 per cent of the cases. Diagnosis of a "probably ureteral" tumor was made in 7.7 per cent. The diagnosis was not even suspected in over 50 per cent of the cases reported (Table 1). It is interesting to note that up to 1915 most of the diagnoses were made at autopsy.

The diagnosis can be correctly made by one alert to this entity on the basis of history, symptoms, physical examination and especially cystoscopic study, with supplementary urologic studies such as are here listed:

1. *Examination of the urine* may reveal gross or microscopic red blood cells, or small fragments of tumor tissue may be found.
2. A *plain roentgenogram* may show metastases in the bones or chest, hydronephrosis or stone in the affected side.
3. *Cystoscopic examination* may reveal efflux of bloody urine from a ureteral orifice (30 per cent), or projection of tumor from the ureteral meatus (25 per cent).
4. The ureteral catheter may give valuable information. An obstruction was encountered at the site of the tumor in 55 per cent of the reported cases. In a few cases (e.g., case) the catheter passed to the renal pel-

TABLE 3.—*Operations Most Often Reported*

	Up to 1945	Since 1945	Total
Nephrectomy and partial ureterectomy, removal of tumor	24	9	33
Nephroureterectomy	23	29	52
Nephroureterocystectomy	10	..	10
Exploratory	10	..	10
Nephrectomy ureterectomy later	9	18	27
Nephrectomy and partial ureterectomy—later ureterocystectomy	8	..	8
Ureteronephrectomy	7	..	7
Nephrectomy and partial ureterectomy—later removed of rest of ureter and tumor	6	1	7
Partial ureterectomy—later removal of rest of ureter and nephrectomy	4	2	6
Resection of lower end of ureter with transplantation to bladder	4	4	8
Partial resection of bladder and ureteronephrectomy	3	5	8
Resection of lower end ureter with transplantation to skin	3	..	3
Resection of tumor bearing area with end-to-end anastamoses	1	2	3
Patients treated by other types of operations	38	5	43

vis readily, causing no bleeding. In some cases, especially if the tumor is located at the lower end of the ureter, slight trauma caused by the mere passing of a ureteral catheter may result in a continuous flow of blood through or around the catheter. Again, a catheter through which blood may be coming may drain off clear urine on passing beyond the tumor.

5. *Urographic studies* are of great value. However, the intravenous urogram is of little or no value in most cases, because of the tendency toward a marked decrease in function in the involved side and the need of a sharp surface delineation for diagnostic purposes. It will usually show no dye or a faintly outlined, hydronephrotic kidney on the affected side. Retrograde procedures include air pyelourograms, stereoscopic urograms of the kidney and ureter, serial pyelograms, the injection of a catheter while drawing it down from the pelvis at different levels, with a picture of each; and, in the presence of an impassable ureteral obstruction, the injection of contrast medium through a tight-fitting Garceau catheter.

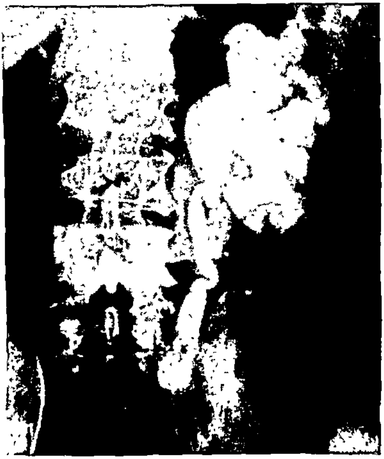

Fig. 8 (Case 3).—Pyelogram showing marked hydroureter and hydronephrosis with definite occlusion at lower end of ureter.

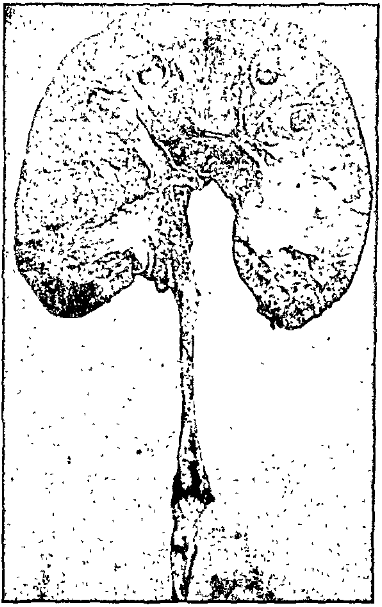

Fig. 9 (Case 3).—Gross specimen, showing hydronephrosis and site of ureteral tumor.

A definite diagnosis of primary ureteral tumor can be made only on a characteristic and constant filling defect in the ureterogram, together with a pyelogram excluding renal neoplasm. The character of the *filling defect will depend upon the type,* shape and extent of the growth. A nonpapillary infiltrating tumor usually causes an irregular decrease in the size of the lumen of the ureter, often accompanied by dilatation of the kidney and ureter above the site of the tumor. The tumor, if solid or pedunculated, may cause a goblet-shaped filling defect with dilatation of the ureter above and below the tumor mass. Multiple papillary tumors will show modifications of this picture and may be seen throughout its entire length. If the surface of the tumor is irregular, the filling defect may present a ragged, motheaten appearance. Hematuria from a ureter which has had its kidney removed is diagnostic of a ureteral neoplasm. Counsellor has stated, "Unexplained hydronephrosis among patients of more than 50 years or hematuria should warrant investigation of the ureters, if no other pathologic change is found."

Positive diagnostic signs present in the reported cases in order of frequency are obstruction to the ureteral catheter, enlarged (hydronephrotic) kidney, blood coming through the ureteral catheter, tumor presenting at the ureteral orifice, a filling defect in the ureterogram and a mass palpable along the course of the ureter.

Pathologic Picture.—Primary tumors of the ureter fall into two main groups, those arising from the structures comprising the ureteral wall and those arising from the mucosa of the ureter. The former type is very rare and includes myoma, hemangioma, fibrolipoma, neurofibroma and sarcoma. These tumors may be either benign or malignant. The latter group constitute by far the vast majority of ureteral tumors. This group of neoplasms have been mentioned under at least twenty different pathologic terms, thus causing much unnecessary confusion. They may be considered to fall into two main groups, papillary and nonpapillary (Table 2).

Papillary carcinoma is most frequent and may appear (a) as a single pedunculated solid carcinoma which distends and blocks the lumen; (b) as a single papillary carcinoma with a sessile invaded base, or (c) as a diffuse papillary carcinoma showing multiple growths and often extending nearly the entire length of the mucosa of the ureter.

The solid or nonpapillary carcinoma usually begins as a localized lesion and may continue as localized diffuse thickening of the wall until the entire circumference is involved. Although the pathologic character of ureteral tumors is quite similar to that of bladder tumors, they tend to spread early, extensively and quickly. This may not be due to a greater malignant activity but rather to the anatomic characteristics of the ureteral wall, in which the musculature is thin and the vascular and lymphatic supply abundant. Keen and Bernstein[22] reported a case in which metastases occurred six weeks after the onset of the first symptoms.

Metastases were observed in 62 per cent of the reported cases. The organs involved, in order of frequency, were regional and distant lymph nodes, liver, lungs, bones, kidney, adrenals, spleen, brain, pancreas and skin.

Prognosis.—The prognosis of carcinoma of the ureter is poor. In the 149 operative cases reported, 33 patients, or 24 per cent, died postoperatively of shock, pneumonia, ileus or myocardial failure; 26 died in the first year after operation; 9 died between the first and the second year, and 6 died between three and four years later. Of the patients recorded as having died four or more years after operation, none died of metastases or local recurrence. Of 32 patients who were followed and reported well, only 6 had been observed four years or more. One patient lived five years and one patient was followed and well eleven years after operation. Crance and Knickerbocker[23] recently reported the case of a patient living and symptom-free twenty-five years after the operation.

Treatment.—A review of the literature reveals that more than thirty different operations have been performed for primary carcinoma of the ureter. The difficulty in making a correct preoperative diagnosis in 40 to 60 per cent of the cases undoubtedly accounts for this great variety of surgical procedures (Table 3). In many cases operation has been performed for hydronephrosis and then, after removal of the

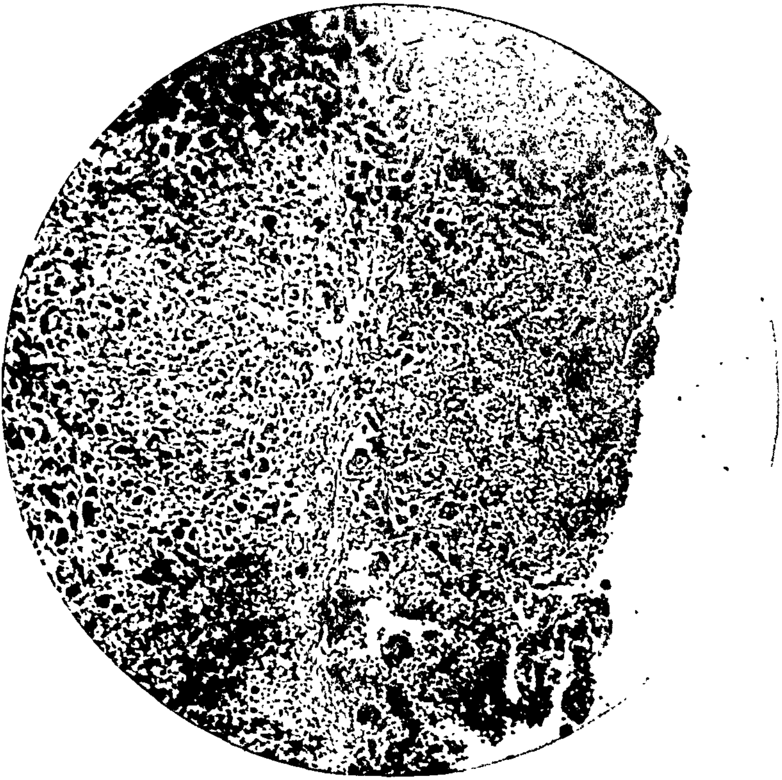

Fig. 10 (Case 3).—High power microscopic section showing squamous cell carcinoma of ureter.

kidney, a second operation had to be performed to remove the tumor-bearing segment of the ureter (Von Cappelen,[24] Judd and Struthers, Suter[25] and others).

The treatment of choice is radical removal of the kidney and ureter, segmental resection of the bladder and as much of the periureteral tissues and lymphatics as possible, depending upon the patient's condition and the operative difficulties encountered. If it is necessary to complete the operation in two stages, the tumor should be removed at the first operation.

Thompson-Walker[26] and Thomas[27] have resected small tumors of the lower part of the ureter and reimplanted the proximal end of the ureter back into the bladder. Papin[28] resected a tumor of the upper part of the ureter and transplanted the ureter into the pelvis. Recently McClelland[29] reported a case in which the involved portion of the ureter was excised and the cut ends

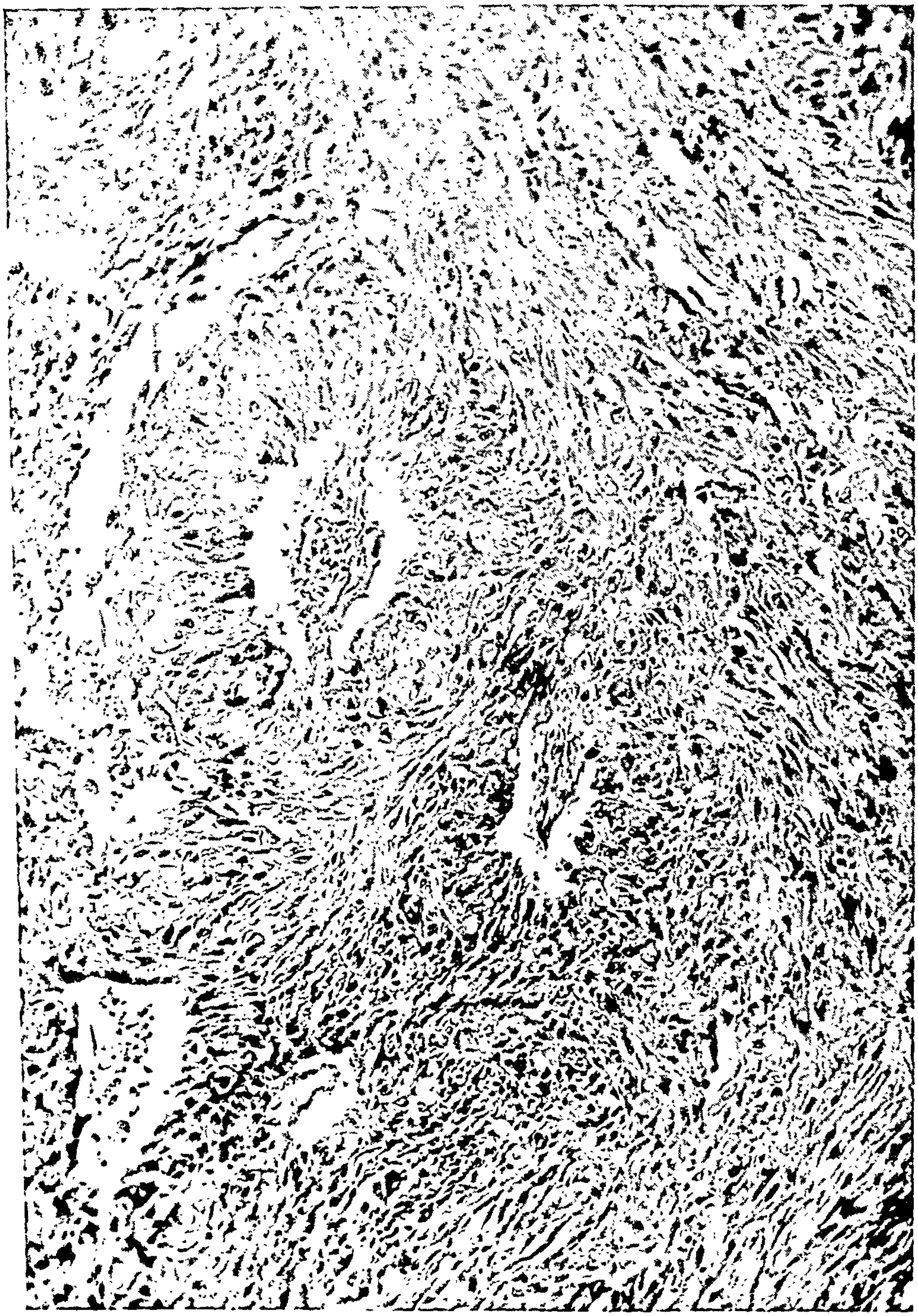

Fig. 11 (Case 4).—High power microscopic section showing transitional cell carcinoma of right ureter.

anastomosed. These procedures are very conservative and may prove effective for small lesions. The experience of most urologists shows that the probability of early recurrence overbalances the value of attempting to save the kidney above the tumor. Each patient's treatment must be individualized and the procedure followed

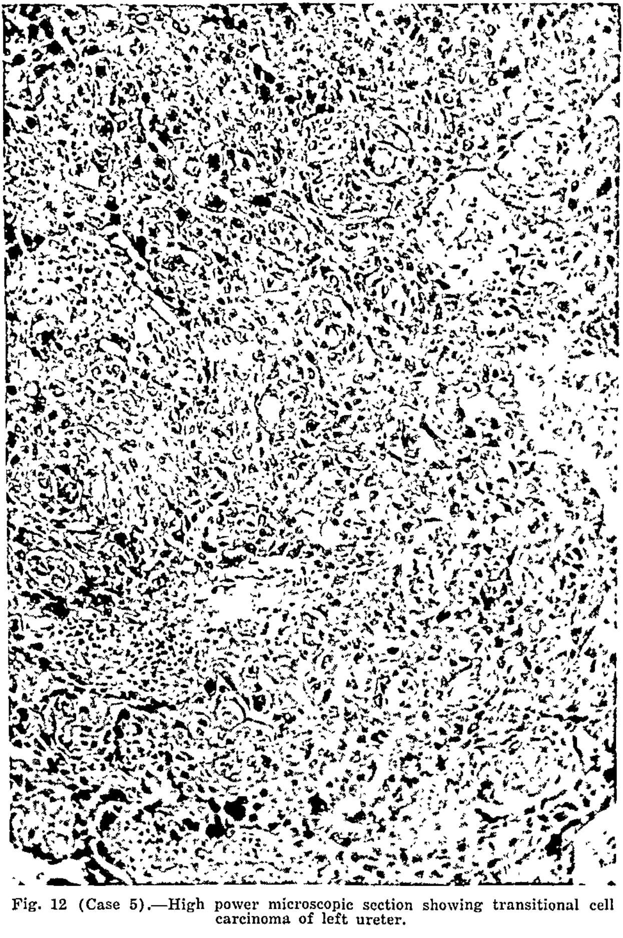

Fig. 12 (Case 5).—High power microscopic section showing transitional cell carcinoma of left ureter.

which is in keeping with the operative *observations and the general condition of the patient.*

High voltage roentgen and radium therapy have been used with questionable results. *Postoperative roentgen treatment, however, is of some value in relieving pain* resulting from extension and metastases.

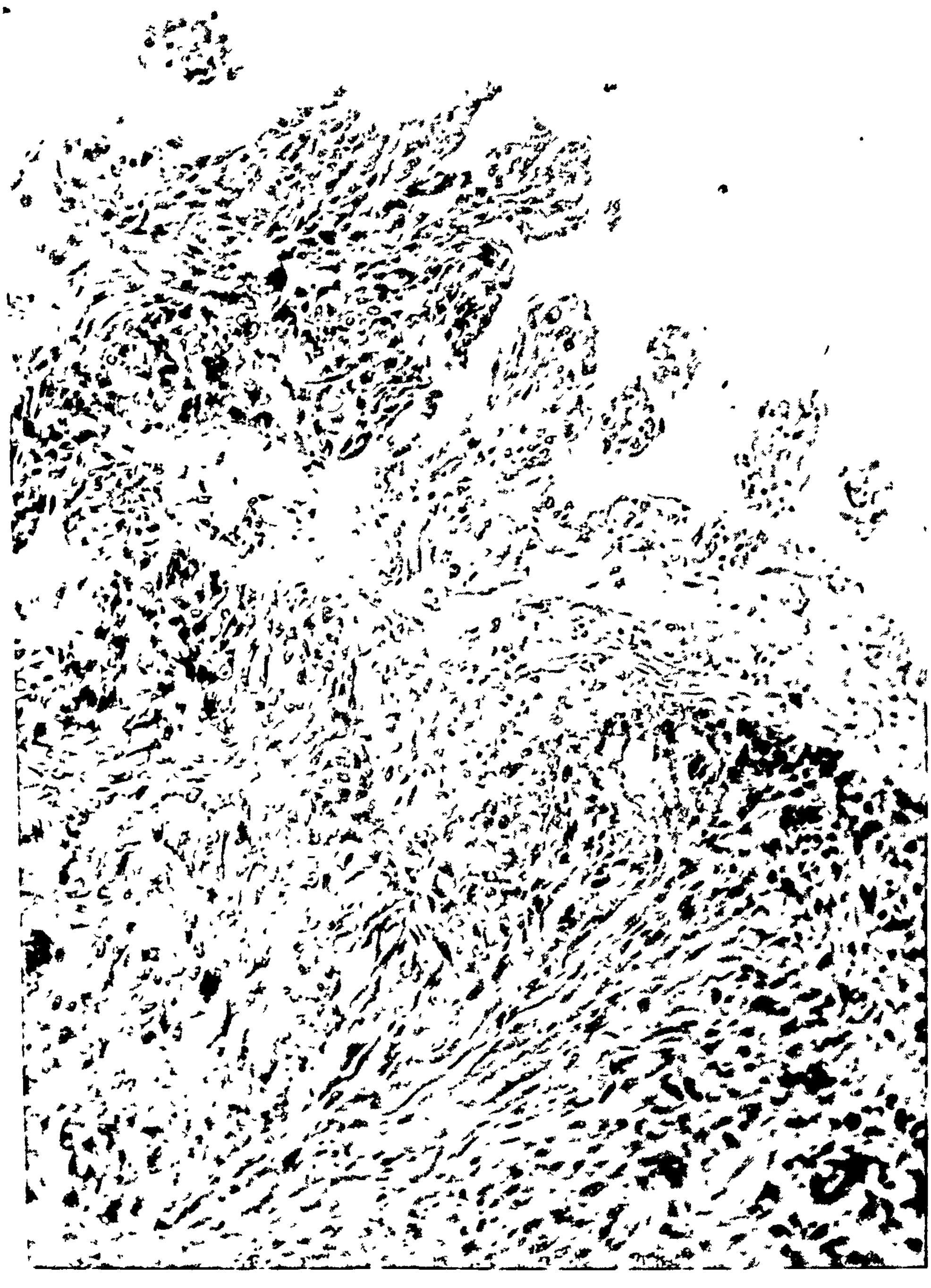

Fig. 13 (Case 7).—High power microscopic section showing transitional carcinoma of right ureter.

SUMMARY AND CONCLUSIONS

The literature on primary carcinoma of the ureter is reviewed, summarized and brought up to date.

Primary carcinoma of the ureter is a comparatively rare condition and is being reported in an increasing rate, owing to new appreciation of this entity's importance and to improved diagnostic technic.

Yet it defies a correct preoperative diagnosis in nearly 40 per cent of cases. It occurs more frequently in the lower third of the ureter and in male patients in the sixth and seventh decades of life.

The diagnosis is based on hematuria from one ureter, together with obstruction or a filling defect as shown by a urogram, or observation of a tumor protruding from a ureteral orifice.

The many confusing pathologic descriptions used in describing these lesions indicate the need of a simple classification. They resemble vesical tumors in their pathologic characteristics except that they spread earlier, more extensively and more quickly.

The greatest hope for cure depends on early diagnosis, so that radical surgical procedures may be carried out.

RÉSUMÉ ET CONCLUSIONS

On passe en revue de la littérature sur le cancer primaire de l'uretère et un résumé est mené à date.

Le cancer primaire de l'uretère est relativement rare et on en rapporte plus souvent étant donné la plus grande importance qu'on attache à son entite et aux améliorations qu'on apporte en matière de diagnostic. Malgré tout, dans 40% des cas, un bon diagnostic pré-opératoire n'est pas posé. Il est plus fréquent au tiers inférieur de l'uretère chez les patients entre 60 et 70 ans.

On base le diagnostic sur l'hématurie venant d'un uretére et la présence d'obstruction ou d'image par addition sur l'urographie ou l'observation de tissu tumoral faisant hernie d'un orifice urétéral à la cystoscopie.

Le nombre confus de signes pathologiques découvrant ces lésions nous indique le besoin d'une classification plus simple. Elles simulent une tumeur vésicale dans leur caractéristique pathologique sauf q'elles s'étendent plus tôt avec plus d'extension et plus rapidement.

Un plus grand espoir de guérison repose sur un diagnostic précoce de telle sorte que l'on puisse pratiquer une cure chirurgicale radicale.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

Der Verfesser gibt einen Ueberblick und eine Zusammenfassung der bis zum heutigen Tage vorliegenden Literatur ueber das primaere Harnleiterkarzinom.

Der primaere Harnleiterkrebs ist eine verhaeltnismaessig seltene Erkrankung, die allerdings mit zunehmender Haeufigkeit beobachtet wird, weil ihre Bedeutung neue Wuerdigung gefunden hat, und weil bessere Mittel der Diagnostik vorhanden sind. Trotzdem entzieht sich die Erkrankung in etwa 40% der Faelle der prae-operativen Diagnose. Das Leiden tritt meistens im unteren Drittel des Harnleiters auf und befaellt vorwiegend Maenner im sechsten und siebenten Lebensjahrzehnt.

Die Diagnose stuetzt sich auf einseitige Harnleiterblutung in Verbindung mit roentgenologisch nachgewiesener Verstopfung oder Fuellungsdefekt des Harnleiters, oder auf die Beobachtung einer aus der Harnblasenmuendung herausragenden Geschwulst.

Die vielen verwirrenden Darstellungen, die zur Beschreibung der Pathologie dieser Geschwuelste angewandt werden, beweisen die Notwendigkeit einer einfachen Klassifikation. Die pathologischen Eigenheiten der Geschwuelste aehneln denen der Blasentumoren mit der Ausnahme, dass sie sich fruehzeitiger, rascher und umfangreicher ausbreiten.

Die Heilungsaussichten haengen wesentlich von einer fruehen Diagnose und der Moeglichkeit eines rechtzeitigen radikalen chirurgischen Eingriffs ab.

RESUMEN Y CONCLUSIONES

Se revisa la literatura sobre el carcinoma primario ureteral, resumiéndola y poniéndola al día.

El carcinoma primario ureteral es comparativamente raro, comunicándose un aumento de su incidencia en relación con nueva apreciación de su importancia y

mejor técnica para el diagnóstico. En el 40% aproximadamente de los casos aun no es posible un diagnóstico preoperatorio correcto. Se presenta frecuentemente en el tercio inferior ureteral y en pacientes masculinos en la sexta y séptima décadas de la vida.

El diagnóstico se basa en la hematuria uniureteral, junto con obstrucción o un defecto de llenado mostrado röntgenográficamente o la observación de tumor procidente de un orificio ureteral.

Las muchas descripciones patológicas confusas usadas para describir estas lesiones indican la necesidad de una clasificción sencilla. Son comparables a los tumores vesicales en sus características patológicas, excepto en que estos se difunden más temprano, más extensamente y más rápidamente.

La esperanza máxima de curación depende del diagnóstico temprano, de modo que puedan emplearse los procedimientos quirúrgicos radicales.

RIASSUNTO E CONCLUSIONI

E’ rivista riassunta e aggiornata la letteratura sul carcinoma primitivo dell’uretere. Il carcinoma primitivo dell’uretere é una relativamente rara lesione che viene oggi riferita in un certo aumento, probabilmente dovuto a migliorata tecnica diagnostica e migliore comprensione dell’entita’ morbosa. Tuttavia sfugge alla corretta diagnosi preoperatoria in circa il 40% dei casi.

Si verifica piu’ frequentemente nel terzo distale dell’uretere e in maschi nella sesta settima decade di vita. La diagnosi é basata sul reperto di ematuria ureterale, insieme con un’ostruzione o un difetto di riempimento nell’urogramma, o il reperto di un tumore protrudente dall’orificio ureterale.

Le confuse descrizioni patologiche di questa entita’ indicano il bisogno di una classificazione semplice. Essi rassomigliano i tumori vescicali nelle loro caratteristiche patologiche eccetto il fatto che essi disseminano piu’ precocemente, piu’ estensivamente e piu’ rapidamente. Le migliori speranze di guarigione risiedono nella diagnosi precoce cosicche il trattamento chirurgico radicale possa essere condotto.

SUMÁRIO E CONCLUSÒES

A literatura sobre o carcinoma primário do uréter é revista, resumida e atualizada.

O carcinoma primário do uréter é comparativamente raro, mas está sendo descobérto em indice crescente, devido a melhor apreciação de sua importancia e ao aperfeiçoamento da técnica de diagnóstico. Em 40 por cento dos casos, contudo, falta um corréto diagnóstico pré-operatório. O sitio de maior frequencia é o têrço inferior do uréter, em pacientes do sexo masculino, na sexta e setima décadas da vida.

O diagnóstico é feito sobre a base de hematúria em um uréter, juntamente com obstrução ou defeito de enchimento demonstrado em urograma, ou observação de um tumôr exuberante de um orificio ureteral.

A maioria dos relatórios usados em patologia para descrever estas lesões é confúsa e indica a necessidade de uma classificação simples. Elas paracem tumôres vesicais em suas caracteristicas patológicas, excépto porque elas se disseminam precócemente, mais extensamente e mais rapidamente.

A grande esperança na cura depende do diagnostico precóce de fórma que processos cirurgicos radicais possam ser empregados.

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Primary Carcinoma of the Ureter

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PRIMARY carcinoma of the ureter is still a rather unusual entity. First described in 1841 by Rayer[1] in an autopsy report, it was not until 1878 that Wising and Blix[2] published a full microscopic description of this disease. By 1900, 8 cases had been reported, all from autopsy reports. In 1930[3] only 14 of 50 patients reported on had had a correct preoperative diagnosis. From this time on, preoperative diagnosis became more frequent. In 1937 Foard and Ferrier[4] recorded 139 such cases, in 1943 Scott[5] obtained 182, and in 1947 Pilcher[6] was able to report 200. Gilbert[7] found only 1 case in 22,810 autopsies from Belleview Hospital between 1904 and 1935; Colston[8] reported 2 instances in 22,000 urologic cases, and Renner[9] observed 3 cases in 13,854 autopsies studied at the Vienna Pathologic Institute.

The symptoms usually include hematuria with or without pain, tenderness over the kidney on the involved side if obstruction has occurred and in some cases the presence of a mass. The growth may have extended into the bladder and be found protruding from the involved ureter, or it may appear as a discrete papilloma in an area of the bladder removed from the orifice. The microscopic picture of these tumors may be likened to that of papilloma of the bladder, which has many of the same characteristics. The similarities are these: both are capable of being transplanted at lower levels in the ureter and in the bladder, and postoperative recurrences of both occur primarily in the bladder. Their pathologic grading is on the same basis, and recurrence shows a definitely increased tendency toward malignant change. The prognosis is based on the grading of the original microscopic picture, and it has been found that the prognosis for the lower grades is good when proper surgical measures are utilized. The higher grades suggest a life expectancy of two to three years. The consensus as to management is in favor of the removal of the kidney and ureter, together with a cuff of the bladder surrounding the orifice on the involved side. Extension usually occurs in the bladder by generalized metastasis.

The present cases have no unusual characteristics and are reported only as a matter of record.

REPORT OF CASES

CASE 1 (J.A.B.).—H. M., a white man aged 54, was seen first on May 7, 1950. He complained of hematuria of approximately two years' duration. From the date of onset of the disease until six weeks before the patient was seen, the bleeding had been painless and intermittent, lasting only twenty-four to forty-eight hours, and the blood had been passed readily and without clots. During the previous six weeks it had been almost constant, passed with clots and discomfort, and accompanied by aching pain over the right kidney area.

Cystoscopic and pyelographic examinations in May 1948 gave negative results. Both the family history and the past history were noncontributory. Physical examination revealed little except slight rebound tenderness over the right kidney. The patient showed no loss in weight or in strength. The temperature was 98.6 F., the pulse rate 80 and the respiratory rate 21. The blood pressure in millimeters of mercury was 154 systolic and 90 diastolic. The voided urine was grossly clear, with a specific gravity of 1.022. There was a faint trace of albumin; a few erythrocytes and leukocytes were seen on the microscopic slide. The erythrocyte count per cubic millimeter of blood was 4,870,000; the leukocyte count, 7,300, with 3 per cent eosinophils, 4 per cent stab cells, 55 per cent segmental cells, 59 per cent neutrophils, 33 per cent

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lymphocytes and 5 per cent monocytes. The nonprotein nitrogen level was 32 mg. per hundred cubic centimeters. The Mazzini test gave negative results. Cystoscopic examination showed a slight enlargement of the prostate, a bladder mucosa clear of papilloma and normal orifices. A No. 6 catheter passed readily on either side. Urine specimens from each side were clear. Intravenous indigo carmine appeared promptly (two minutes) on the left in excellent concentration. No dye was excreted on the right during the examination. On microscopic examination of the divided specimens, both sides revealed 8 to 10 red blood cells per high power field. The roentgenologist reported moderate hydronephrosis and hydroureter of the abdominal portion on the right side. The right ureter contained serpiginous filling defects, which appeared to be attached to the ureteral wall at several points (Fig. 1).

After the diagnosis of carcinoma of the ureter had been made, the right kidney and ureter were removed. This was done through a modified Gibson incision on the right, exposing the ureter extraperitoneally in the true pelvis and following it down to the bladder, severing it flush with the bladder proper. The proximal end was ligated, covered with gauze and pushed upward. Closure of this wound was accomplished, with drainage. The kidney was exposed through a transverse incision and readily removed, with the complete ureter. The postoperative course was uneventful, and the patient was discharged from the hospital on the ninth postoperative day.

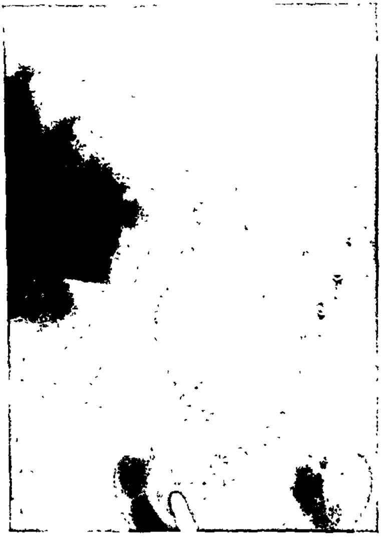

Fig. 1 (Case 1).—Filling defect in lower third of right ureter, with mottling shadows above denoting blood clot debris.

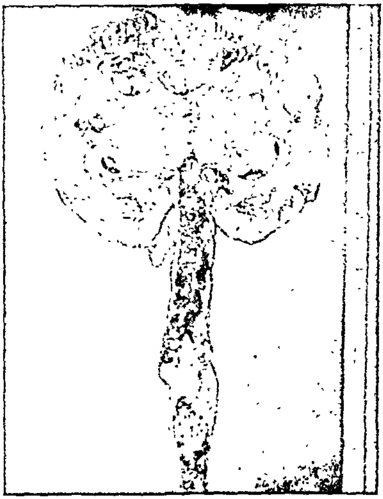

Fig. 2 (Case 1).—Cut section of gross specimen, showing solid tumor filling lower third of ureter with clot and debris above.

Pathologic examination of the gross specimen showed moderate hydronephrosis and hydroureter and a pedunculated polyp just below the midportion of the ureter, measuring 2 cm. in length by 1.5 cm. at the greatest diameter. The stalk appeared intact, the body of the polyphemorrhagic and edematous (Fig. 2). Apparently there was complete occlusion of the ureter, with much hemorrhagic fragmented débris above and below the polyp. Microscopic examination revealed the ureter to be lined with flat transitional epithelium which extended over the stalk and part of

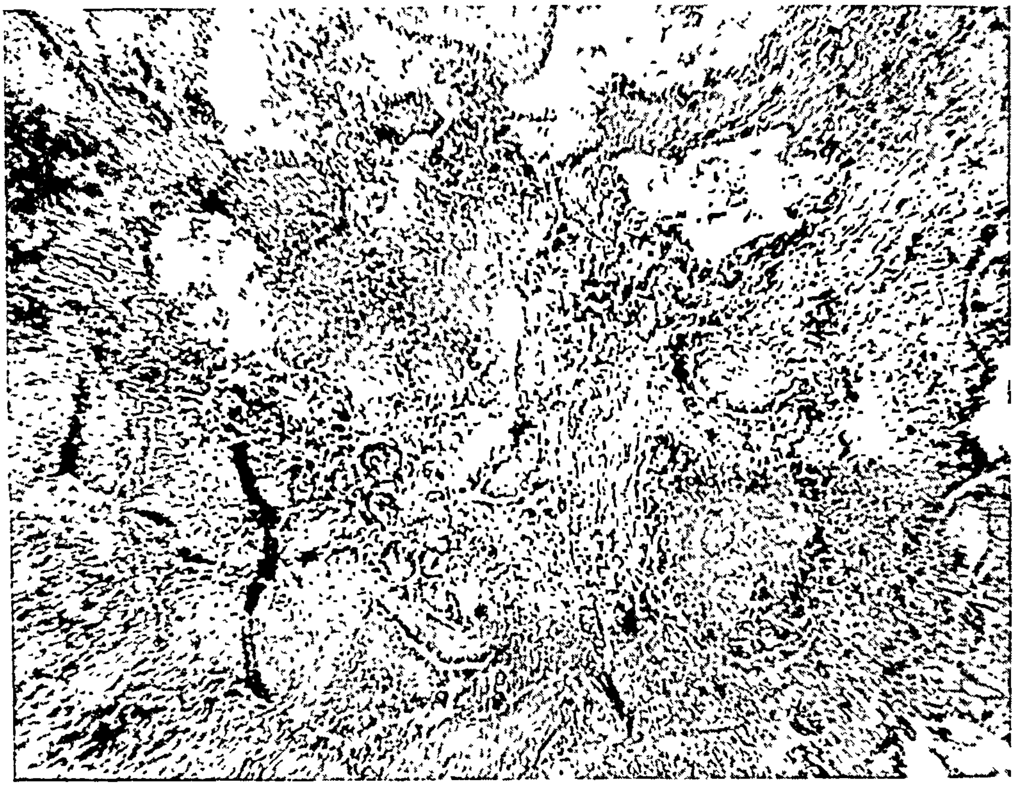

Fig. 3 (Case 1).—Low power magnification of tumor, showing invasion of submucosa by pyknotic cells surrounding stalks, occasional invasion of the veins with tumor cells. Grade 2.

the polyp. The polyp was composed of fibrovascular stroma and covered with transitional epithelium, palisaded and stratified. The cells in some areas were of unequal size and shape, and some possessed nuclei which were hyperchromatic and pyknotic. A few atypical mitoses were present (Fig. 3). The diagnosis was transitional cell carcinoma of the ureter (Grade 2), with hydronephrosis and hydroureter.

This patient was seen at the end of ninety days. He has been symptom free. Urinalysis gave negative results except for 3 to 4 white blood cells in the voided specimen. The blood count was normal. Cystoscopic examination showed the bladder to be entirely free of papilloma.

CASE 2 (L.A.).—C.F.B., a white man aged 51, was admitted to the Kentucky Baptist Hospital under the care of Dr. Atherton, on Oct. 3, 1950. The patient complained of hematuria. The present illness began on September 29 with painless gross hematuria of only a few hours' duration. There were no other symptoms. The patient's health had always been good, and he had had no illnesses other than a low grade chronic sinus infection. A tonsillectomy had been performed in 1928. Otherwise the past history and the family history were irrelevant.

The patient was well developed and well nourished. The temperature, pulse and respiration were normal. The blood pressure in millimeters of mercury was 146 systolic and 74 diastolic. Physical examination revealed no abnormality. The erythrocyte count was 4, 750,000 per cubic millimeter of blood, with a hemoglobin level of 87.6 Gm. and a color index of 0.95; the leukocyte count, 9,300; the differential count was normal. The urine was normal except for 5 or 6 red blood cells on the centrifuged specimen.

A diagnostic cystoscopic examination was performed on September 4 by Dr. Atherton and showed a normal urethra, prostate and bladder. No evidence of tumor, stone or diverticulum appeared. No. 6 catheters passed easily on either side. Intravenous indigo carmine appeared promptly on the right, in six minutes in a somewhat lesser degree on the left. Pyelograms showed a defect in the lower part of the left ureter (Fig. 4). On

October 5 an intravenous pyelogram was taken which showed prompt filling on the right, delayed filling on the left (fifteen-minute film) and again revealed the filling defect. The diagnosis of left ureteral tumor was determined. On October 7 an operation was performed in which, through a Gibson incision, the left ureter was freed and detached, with its orifice and a cuff of the bladder. A transverse kidney incision was made, and the kidney and ureter were removed. No particular difficulty was encountered, and the wounds were closed with rubber tissue drains. Convalescence was uneventful, and the patient was discharged on October 24, the seventeenth postoperative day.

The pathological report revealed the specimen to consist of a normal-looking kidney 10 by 8 by 6 cm., with 22 cm. of ureter. At about the midportion of the ureter was a pedunculated tumor (Fig. 5) 3 by 1 by 1 cm., proximal to which there was dilatation of the ureter, pelvis and calyces. Sections through the tongue of the tumor showed it to be composed of fused fronds interlacing in a papillary pattern (Fig. 6). The epithelium was of a stratified transitional type. There were a few scattered mitoses, but little if any metaplasia was observed. There were aggregations of small round lymphocytes throughout the tumor and in the adjacent ureteral wall.

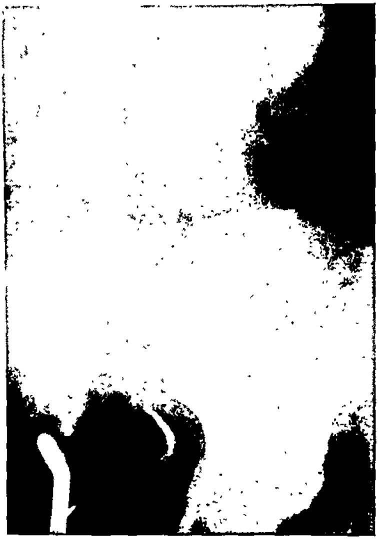

Fig. 4 (Case 2).—Ureterogram on left, showing filling defect in lower third typical of papilloma.

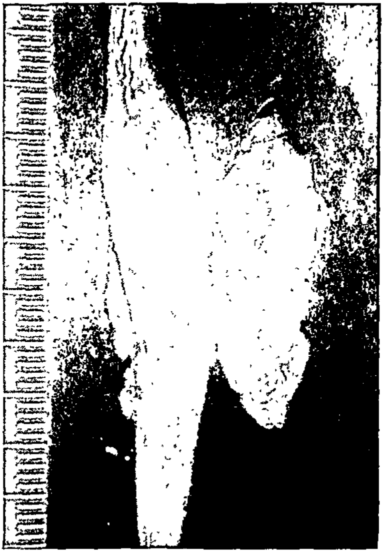

Fig. 5 (Case 2).—Cut section of left ureter and papilloma lifted from its bed but joined to ureteral lining by stalk.

The condition was diagnosed as papillary carcinoma (transitional cell type) of the left ureter. The grade was not given.

This patient was examined cystoscopically at the end of ninety days. The bladder was free of implants. Clinically he was considered well.

SUMMARY

Two cases of primary carcinoma of the ureter preoperatively diagnosed are reported. Both cases fell into the usual clinical pattern, and the patients were treated by removal of the kidney and ureter on the involved side.

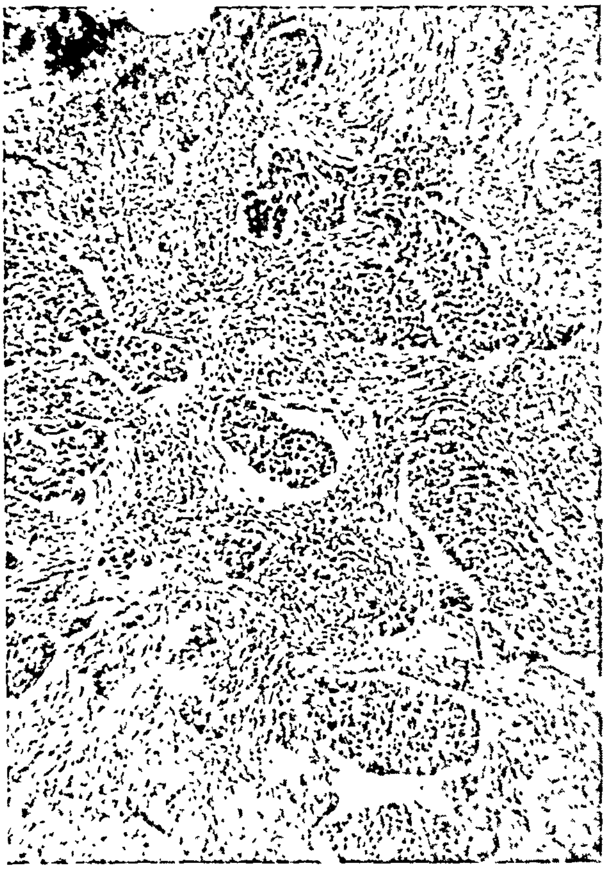

Fig. 6 (Case 2).—Low power magnification of tumor showing stalklike invasion and (lower left) invasion of blood vessel. Also Grade 2.

RÉSUMÉ

On rapporte deux cas de cancer primitif de l'uretère dont le diagnostic avait été fait avant l'opération. L'histoire de ces deux cas est semblable aux autres; les patients ayant subi l'urétéro-néphrectomie.

RESUMEN

Se comunican dos casos de carcinoma ureteral primitivo, ambos diagnosticados preoperatoriamente. Ambos casos presentaron el cuadro clínico de rigor, habiendo sido tratados con la extirpación del riñón y uréter del lado enfermo.

ZUSAMMENFASSUNG

Es werden zwei Faelle von primaerem Harnleiterkrebs berichtet, die beide vor der Operation diagnostiziert worden waren. Beide Faelle zeigten das typische klinische Bild und wurden mittels Resektion der Niere und des anschliessenden Harnleiters behandelt.

RIASSUNTO

Sono riportati due casi di carcinoma primario dell'uretere, entrambi diagnosticati preoperativamente. Entrambi i casi si inquadrano nell'usuale aspetto clinico e vennero trattati con nefrectomia ed ureterectomia—

SUMÁRIO

Dois casos de carcinoma primário do uréter, ambos diagnosticados pre-operatoriamente, foram relatados. Ambos os casos cairam dentro da rotina usual de tais casos e foram tratados pela remoção do rim e do uréter do lado atingido.

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Rhinoplastic Problems Confronting the Rhinologist

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SINCE a better understanding of the clinical physiology of the nose has developed and since there has been a gratifyingly increasing interest among otorhinologists in rhinoplastic procedures, physiologic principles are being applied more and more; the nose is considered not merely as an ornament, but as a functioning structure as well.

Physiology of the Nose.—Deformities of the nose frequently interfere with normal physiologic nasal function in that they affect three chief functions of the nose: (1) olfactory, (2) respiratory and (3) phonatory.

1. Anosmia, or a loss of the sense of smell, may well be due either to an obstruction of the nose, such as a deviated septum, or to some degenerative change in the nose itself, such as ozena, involving the olfactory nerve.
2. Any dysfunction in nasal respiration will interfere with the proper filtering and humidifying of inspired air, thus causing predisposition to recurrent rhinitis, sinusitis, etc.
3. The nasal chamber itself is an important factor in voice production; for example, a badly deflected septum may produce a nasal twang in the voice. And further, as has been noted in professional vocalists, the upper and lower lateral cartilages may materially alter the quality of the voice, giving it a thudlike sound without any resonance.

Obviously, proper aeration and ventilation of the nose depends upon normal nasal structure, and it is logical to assume that any impairment in nasal physiologic function may well be due to a deviated septum, a thickened or broad columella, a retracted columella, a drooping tip, a large convex or a markedly concave dorsum nasi, nasal fracture, elongated hypertrophied upper lateral cartilages, flaccid lower lateral cartilages or a lobule distorting the nose sufficiently to disturb both the negative and the positive air pressure. There may also be minor or major anatomic abnormalities in the upper or lower cartilaginous vaults. Any of these anatomic abnormalities, or a combination of them, may distort phonation, which in turn creates abnormal eddies within the nasal fossae. There also may be neoplastic growths, benign or malignant.

There is an abundant literature on the nasal septum. An attempt will be made to classify septal surgery in three eras, namely:

1. *The Orthopedic Era.*—1750, Quellmaltz; 1839, Velpeau; 1839, William of Salicet, who proposed dilatation of nares; 1882, Ingalls, who resected the quadrangular cartilage; 1886, Krieg, R., who extended the resection of bone; 1889, Roberts, J. B., who punctured a piece out of the septum.
2. *The Classic or Orthodox Era.*—1890, Killian; 1905, Freer; 1906, Ballenger, W. L.; Yankauer; Sluder; Dunning; MacKenzie; Douglass; MacKenty.
3. *The Fluid or Contemporary Era.*—1929, Metzenbaum; Galloway; Fomon and Gilbert; Cottle and Loring; Bolotow; 1944-48, Ersner.

The last two decades of the nineteenth century witnessed the development of two great schools of thought in regard to the

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function of the nasal septum and the respect with which it is to be treated. The first school, of which Asch was the foremost champion, preached that the cartilage of the septum should be preserved by destroying its resiliency and forcing it back into its proper place. The second school held that the septum is a mere partition and serves no physiologic function. On this premise Ingalls originated the operation of submucous resection of the quadrangular cartilage in 1882. Krieg in 1886 extended the operation by including in the resection the vomer and the perpendicular plate of the ethmoid bone. This operation was further developed by Freer and Yankauer and was finally perfected by Ballenger with his invention of the swivel knife. It then became a free-for-all because of the ease of the operation. In the hand of the master Asch, good results were obtained with Sluder's operation. His method consists in the making of three parallel longitudinal incisions through the mucous membrane and cartilage on the side of the convexity and the pushing over of the upper piece of cartilage so that it overrides the lower, in order to overcome the resiliency of the three pieces. Gleason's U-shaped flap operation had its advocates. Although submucous resection was hailed as the great modernizing step in nasal surgery, it was soon realized that many failures and a few disasters were encountered.

That perfection was not attained by submucous resection is evidenced by the fact that Lowe created a sensation in 1905 by his operation, decortication of the face. His method consisted of making an incision through the gingival-buccal fold of the upper lip, extended from the first molar on the one side to that on the other, and clear to the bone. The soft parts were then separated from the bone until the under border of the pyriform fossa was in view. The inferior and anterior borders of the cartilaginous septum were then denuded of the soft parts by means of shallow longitudinal incisions along the anterior nasal spine. The mucous membrane was not perforated, as the whole operation was extranasal. A raspatory, bent on the flat, was then inserted beneath the inferior turbinate, and from that point the lateral nasal wall, the nasal floor and the septum were undermined. The nasal floor was invariably loosened first so as to avoid tearing of the mucous tube. After elevation of the mucous membrane, the anterior parts of the quadrangular cartilage were exposed. Deformities in the anterior segment of the septum could then be removed. This constitutes an important part of the modern conception of reconstructive surgery, namely, the mobilization of the external portion of the nose.

In recent years successful reconstructions of the deformed nasal septum have been devised by MacKenty, Metzenbaum, White, Peer, Galloway, Cottle and Loring, Fomon and Gilbert, Bolotow and Ersner. We attribute our success to the fact that we have immobilized the septum, employed struts and battens, prevented flaccidity of the septum by means of one or more cartilaginous implantations and minimized scar tissue formation by means of epithelialization; last but not least, we have taken into consideration the columella, which is par t of the septum and therefore an essential factor in septal reconstruction.

Anatomic Relations. — In considering the anatomic relation of the deviated septum to other nasal deformities one must always bear in mind that normal physiologic nasal function is dependent upon normal anatomic relations.

For academic purposes, an anatomic outline is presented to show the relation of a deviated septum to other nasal deformities:

1. Deformities limited to the septum:
    - (a) Osseous septum:
      ethmoid bone, vomer, maxillary spine
    - (b) Cartilaginous septum:
      quadrangular cartilage
      vomeronasal cartilage
      mesial crura
    - (c) Columellar septum
2. Septal deformities with involvement of contiguous structures:

(a) Osseous vault: (1) nasal bones; (2) frontal process of the superior maxilla
(b) Upper lateral cartilaginous vault
(c) Lower lateral cartilaginous vault (lateral and mesial crura)

While it is the chief concern of the otorhinologist to restore normal physiologic function, he must never lose sight of the ever present and all-important esthetic factor. To correct an obstruction of the nose in order to reestablish proper aeration and drainage may call for an operation on the septum, such as a typical submucous resection. This, however, may not be adequate to establish full physiologic function. As physiologic concepts change, so do rhinoplastic procedures. Thus, it may also be necessary to elevate the nasal tip, correct the columella, revise the bony framework, and alter the upper and lower lateral cartilages. These are many of the numerous problems that fall into the domain of the contemporary otorhinologist; therefore, it is necessary to perform a combined operation, or a one-stage surgical procedure combining submucous resection and nasal reconstruction, to establish normal physiologic function as well as to attain a good cosmetic result.

Injury to the nose is a frequent occurrence. Because of its unprotected position and its projection, the nose is more vulnerable to trauma than is any other portion of the face. Nasal injuries may occur at birth, during childhood or during adult life.

Injuries of the nose may be external, endonasal or both. Nasal injury may also involve the soft structure, the cartilaginous structure, the mucous membrane or the bone.

A fractured nose is the most prevalent type of injury. Fractures may be unilateral, bilateral, linear, comminuted, convex or depressed. Unfortunately, nasal injuries are too often treated rather complacently and without receiving the attention they warrent. Supposedly trivial nasal injuries often are the forerunners of serious extranasal and intranasal involvement. When a nasal injury occurs, the general practitioner ordinarily administers palliative treatment of the epistaxis, bloody ooze, edema and ecchymosis, but may unfortunately overlook the possibility of a fracture. Frequently it is not until the patient begins to complain of an obstruction that he is sent to the rhinologist. This practice has its undesirable aspects, as once the fragments of the bone and cartilage have become fixed it is too late to elevate the fracture. Sometimes the fragments of bone have become so displaced that they obstruct breathing, interfere with the patency of the nose or act as trigger points. They may also create an impediment to drainage and involve the sinuses. This may produce a typical picture of nasal physiologic dysfunction as well as a resultant external nasal deformity. One must always remember that the elevation or the resetting of a nasal fracture must be done promptly, and in the early stages of the healing process. The best time is within the first few days following the injury, and before the fragments can become fixed in the wrong position.

When the rhinologist is called to correct an acute compound nasal fracture with external lacerations, the area should be cleansed of all debris and all foreign bodies should be meticulously removed so as to prevent tattooing of the skin. Primarily, the fracture should be reduced before the external wound is sutured, as otherwise the sutures may be loosened or torn from their mooring. Another precaution is to handle the tissues gently, avoiding a rat-tooth forceps, clamps or hemostats and preferably employing small dural hooks to help approximate the separated tissues. Wherever possible, the subcutaneous and soft tissues should be brought together before the external cutaneous wound is sutured.

Once the injured structures have become fixed in the wrong position, the surgeon may be confronted with a septal dislocation that deprives the tip of the nose and the columella of support. This causes a drooping of the tip and distortion of the columella.

The septum is more vulnerable to injury than is any other nasal structure. Clinical observation has shown that many septal deviations are associated with external nasal deformities, and rarely does one encounter a nasal disfigurement in which the septum is not involved. True, some nasal deformities are the result of congenital malformations, heredity factors, or disease, such as syphilis, atrophic rhinitis and/or ozena. By and large, however, most nasal deformities are due to trauma.

Functionally as well as esthetically, the internal portions of the nose are integral parts of the external nasal pyramid. It must be kept in mind that normal physiologic nasal function is dependent upon normal anatomic relations. Any distortions within these structures may interfere with phonation, breathing, aeration, olfaction, humidification, ventilation, sinus drainage and, last but not least, nasal conformity. The following are some of the factors responsible for nasal dysfunction which may be corrected rhinoplastically: deflected septum, thick columella, flaccid alar or lower cartilages, concave or convex alae, hypertrophied upper and lower lateral cartilages, and immobile or frozen intercartilaginous aponeurosis (plica limen nasi) located between the upper and lower lateral cartilages.

A plastic operation on the septum consists of resecting or removing the obstruction, whether it exists at the anterior or the posterior portion of the septum. When correction and elevation of a drooping nasal tip is considered, one often finds that the external portion of the nose is normal but the buttress part of the septum is causing obstruction.

At one time it was believed that a saddle nose which followed a submucous resection was due to complete skeletization of the septum; rhinologists could not understand why, entirely apart from syphilitic or traumatic factors, a saddle nose developed in some patients and not in others. Today we can explain the reason for this deformity. This result occurs in patients with the platyrrhine nose in which the upper lateral cartilages are short in their relation to the quadrangular cartilages of the septum, and the shortness of the upper lateral cartilages rather than the submucous resection was responsible for production of the saddle nose. Should the nose still be depressed after the upper lateral cartilages have been repositioned over the dorsum nasi, it becomes necessary to take the cartilage that was removed from the septum and implant it over the sewed lateral cartilages to fill in the concavity. If the upper lateral cartilages are long and their attachment extends forward and toward the caudal end of the septum, a saddle or a concavity in the ventral portion develops after submucous resection.

A further prophylactic measure against saddle nose is to sew either the upper lateral cartilages over the dorsum nasi (ventral portion of the nose) and/or place a cartilage batten to fill in the concavity.

The nose requires rigid and semirigid structures in order to permit normal nasal respiration. The semirigid structure is anterior, while the rigid or bony structure, consisting of the perpendicular plate of the ethmoid and vomer, is posterior. Nature evidently anticipated that injury to the nose would occur, and accordingly placed the semirigid structure anteriorly to act as a natural buffer and to absorb some of the shock. If the septum is involved, early correction of its cartilaginous portion should be instituted before fibrosis takes place. By early correction the danger of faulty development of the face can be avoided. This is particularly true of injuries to children. Metzenbaum, who pioneered in this work, attempted correction of the septum by replacing it in its proper position; he failed, however, because he did not completely immobilize the cartilaginous part of the septum.

Bowing of the septum may be the result of injuries when the external deformity has been corrected and the septum neglected.

It appears that when vital air plays an essential role it is necessary to have an osseous and semirigid structure and musculature. The cartilaginous part of the septum is such that when air enters into the nose there is a sway of this part in response to the air current. Concomitant with this are the movements of the upper and lower lateral cartilages and the intercartilaginous aponeurosis. When complete submucous resection is performed, the semirigidity and rigidity are gone and only a flaccid membrane remains. This changes the air current and produces eddies. After submucous resection, therefore, it is important to replace straight, small, thin pieces of cartilage between the septal mucous membrane flaps so as to reestablish semirigidity.

The saddle nose resulting from submucous resection is caused by contraction of the scar tissue, which exerts an extra strain pulling the nose downward, thus creating the familiar effect. To overcome this, the line of septal incision is epithelialized by suturing the free septal mucous membrane so as to promote primary healing. A straight, small piece of cartilage is replaced between the mucosal flaps to help support and eliminate the stress. The cartilage will then act either as a strut or as a batten.

Cottle and Loring, in a recent publication, stated that they place small pieces of cartilage which in effect act like a series of Z-plastic flaps. This diminishes the possibility of postoperative scar formation and contraction.

Other Nasal Deformities.—It is the aim of the rhinologist to achieve functional physiologic efficiency as well as structural balance in cases of (1) a twisted or scoliotic nose; (2) a drooping nasal tip; (3) a thickened or wide columella, and (4) crushing injuries with adhesions and synechia.

1. A twisted or scoliotic nose may be the result of a deformity of the lower third of the nose or the cartilaginous vault. In this case, only the septum and the upper or lower lateral cartilages are operated upon. When the twisted nose is due to a bony displacement a complete rhinoplasty may be necessary.

2. A drooping nasal tip interferes with nasal respiration. To demonstrate this point, place the thumb or one of the fingers at the nasal tip and elevate the tip upward. When the tilt reaches the proper elevation, the patient will tell you that his breathing has improved. By the same token, this can be accomplished surgically through the transfixion route with or without submucous resection. A drooping tip and/or a retracted columella due to the lack of support can be avoided by means of (a) a columellar strut and (b) suspension of the columella to a higher level. The suspension is accomplished with either orthopedic or hammock sutures. The nasal septum or the upper lateral cartilages may be utilized as the fulcrum for the suspension.

3. The columella is an integral part of the septum. Thickening or widening of the columella may be due to protrusion of the nasal spine, thickened subcutaneous tissue, displaced mesial crura, etc., which interferes with normal nasal respiration. In order to improve physiologic function, rhinoplastic procedures must be instituted.

4. To improve nasal respiration after crushing injuries in which the nose has been almost completely flattened, no rhinoplastic procedure should be considered until one has overcome the stenosis by breaking up the adhesions and synechia. This is accomplished by skin-grafting the interior of the nose (Sano method). The graft is held in place by packing, stent or rubber foam. After this is accomplished one can readily graft bone or cartilage to elevate the nose. The procedure has served a twofold purpose, producing both physiologic and cosmetic improvement.

Physiologic Function of the Upper and Lower Lateral Cartilages and Their Relation to the Septum.—The ventral borders of the upper lateral cartilages are continuous with, and form the wings of, the nasal septum. During respiration they act as fluttering valves. The caudal ends of the upper lateral cartilages are brought close to the septal cartilage upon inspiration (negative pressure), thus diminishing the inlet of the air and so helping proper distribution of the air supply into the nose. It is well known that they move and vibrate and act as a partial valve. One can feel the vibrations upon humming and easily see the extent of their mobility upon deep inspiration and expiration. They also contribute to facial expression.

The lower lateral cartilages are horseshoe-shaped and consist of a mesial crus, a dome and a lateral crus. The mesial crus lies in the columella; the lateral crus extends halfway down the lobule, while the crura act as a dome. The lower lateral cartilages help to keep the nose and vestibule open. In normal position the cephalic end of the ala overrides the caudal end of the upper lateral cartilages. During inspiration the caudal portion of the ala (lower lateral) is everted and the cephalic end inverted, thus creating pressure upon the caudal end of the upper lateral cartilages. This action creates a fluttering valve, narrowing the orifice of the roof of the vestibule, and thus aids in better distribution of the air into the nose and into the pulmonary structures. This physiologic action is well explained by Baronelli's law. When the ala is narrowed so as to cause further reduction of the size of the vestibule, the volume and velocity of the air intake is changed. A wide, roomy nose is not necessarily conducive to the proper volume of air intake and distribution. Normally, the nose is provided with upper and lower lateral cartilages which act as valves, and the elliptical nares act as pressure slits or chinks through which the inspired air is forced and distributed. For this reason wide nares, which are encountered in patients with ozena, are frequently narrowed in order to improve the synergistic action of these "fluttering valves".

In the presence of dislocation, distortion, hypertrophy or atrophy of these cartilages there is interference with normal physiologic function and only rhinoplastic procedures will help to create it. The most important diagnostic point in atrophic the treatment of upper and lower lateral cartilages is the inability to breathe deeply through the nose. This can be observed on deep inspiration when the cartilages impinge upon the septum and interfere with the ingress of air. The intercartilaginous aponeurosis is of extreme importance because it permits the action of the upper and lower lateral cartilages. A "frozen" aponeurosis due to scar tissue or injury will interfere with the cartilaginous movements, resulting in faulty air intake, poor distribution of air in the nose and improper phonation.

In rhinoplastic surgical procedures one must be careful not to fix or create a "freezing" of the intercartilaginous aponeurosis, because it will distort the position of the upper and lower lateral cartilages and result in faulty action. This may also occur after submucous resection.

The rhinoplastic procedures to establish normal physiologic function consist of replacing parts, resetting parts, removing any obstruction to improve the direction of air currents, mobilizing and repositioning parts, shortening the septum, resecting the septum, narrowing the columella by means of removing subcutaneous tissue and suturing the raw surfaces together, fixing the columella in the proper position, elevating a drooping tip, removing any convexity, filling in any concavity, trimming parts, fitting parts and preserving all tissue wherever possible. One must avoid unnecessary scarring; epithelialize all raw surfaces so as to minimize scar formation; make the appropriate correction and, if necessary, approximate the upper and lower lateral cartilages to the general conformation of the reconstructed nose; insert a strut or batten for support of the columella, and preserve the plica limen nasi in order to prevent freezing or fixation of the aponeurosis.

Septal Abscess.—This lesion should be mentioned among problems that confront the rhinologist. Although septal abscess may or may not be a rhinoplastic problem, it is frequently encountered.

A septal abscess is usually secondary

to an infected hematoma and should receive prompt treatment; otherwise it may lead to destruction of the septum, with subsequent perforation and loss of the dorsal support. The abscess should be incised for evacuation of the infected material. Suction should be employed to remove the debris and the sequestra. A small piece of packing should be inserted between the mucosal layers for forty-eight hours. In the interim antibiotics and biochemicals should be administered parenterally.

As soon as the infection subsides, which may be within two or three days, an autogenous or isograft cartilage should be inserted between the layers of the mucous membrane. This precaution, will prevent the development of flat, broad saddle nose.

In 2 instances, one of us (M. S. E.) implanted tantalum plate between the mucosal layers. The results to date have been encouraging, but the patients are still under observation.

It would be interesting to note the effect of tantalum plate implantation in a case of sepal perforation, but we have not employed this procedure.

SUMMARY

Prevention of complications must be the paramount objective of all operative procedures. Although the incidence of failure has been reduced to a minimum, physiologic failures in rhinoplastic procedures still occur, and means to avoid some of these are herewith given.

1. *Drooping of Nasal Tip.*—When the septal cartilage is protruding caudally, producing a drooping of the nasal tip, removal of a triangular piece of cartilage from the caudal end of the cartilaginous portion of the septum is necessary, and with an orthopedic suture the columella is suspended upward, the septal part of the cartilage being used as the fulcrum to elevate the nasal tip.

2. *Septal Perforation.*—Perforation of the septum, although it causes little disturbance, involves discomfort and may give rise to a whistle, air eddies, crustations, scabs or epistaxis. The perforation may be corrected surgically or by epithelialization. One procedure is to epithelialize the septal mucous membrane in the line of incision. Another is to incise the septal mucous membrane so as to form a flap to cover the perforation. This flap is retained in place by sutures, by packing, or by packing with oxycel cotton or gelfoam. Dental compound packing may also be employed.

For an old perforation when a flap is not available it is best to freshen the edges of the perforation and also to abrade the turbinal mucous membrane on one side. The septum is then pushed over to the abraded side and packed with gauze on the nonabraded side. The packing is left in place for about a week, until adhesions and a synechia form between the septum and the turbinal mucous membrane.

The next stage in this procedure is to detach the septum from the lateral nasal wall. The lapse of time is purely elective. The septum is then detached. The bleeding surface from the turbinate is electrocoagulated and the septum remains *in situ* without the perforation. In other words, the perforation is filled in with mucous membrane, the turbinal mucous membrane acting as the donor.

Whistling respiration may be eliminated either by enlarging the opening or by obliterating the perforation as just described.

3. *Air Eddies.*—Normally, the septum is a rigid mucomembranocartilaginous and osseous structure dividing the nose into two parts. In a number of instances we have noted that instead of the septum being rigid, it was flaccid, and the flaccid septum changed position with inspiration and expiration, thus creating eddies. Air eddies can be eliminated by electrocauterization along the floor of the septum, creating scar formation, and thus the septal mucous membrane becomes more taut.

4. *Scar Formation, Scar Contraction and Synechiae.*—These conditions can be avoided by epithelialization or by various types of packing which prevent roughened

edges from adhering. The packing may be made up of vaseline gauze or dental compound.

5. *Scabs and Crustations.*—Crustations and scabs occur only when there is a perforation or where there is roughened abraded tissue. Crustations may be softened with hydrogen peroxide and olive oil. All granulations and abraded areas should be cauterized.

6. *Epistaxis.*—The incidence of hemorrhage has been greatly reduced because of preoperative and postoperative care and the administration of vitamins K and C. Should epistaxis occur postoperatively, it is important that the bleeding area be located. One may employ electrocoagulation, the actual cautery, injection of sclerosing solutions into the bleeding area or packing of the bleeding surface with oxycel or gelfoam.

CONCLUSIONS

1. Deformities of the nose frequently interfere with normal physiologic nasal function.
2. The most prevalent injury to the nose involves the septum.
3. Normal physiologic nasal function is dependent upon anatomic relationships.
4. Although submucous resection is a modern step in intranasal surgical procedure, it is only one of the phases of nasal reconstruction.
5. The importance of adjusting the upper lateral cartilages to the septal cartilage in order to establish proper respiration cannot be overemphasized.
6. In cases in which the lower cartilaginous vault is involved, it is obvious that submucous resection alone will not improve respiratory function unless the lower cartilaginous vault is corrected.
7. In cases in which a saddle nose is present preoperatively the septal cartilage which is removed during submucous resection should be utilized and transplanted in order to fill in the concavity.
8. To prevent flaccidity of the septum after submucous resection, it is essential to replace a segment or segments of the resected septum between the flaps of the mucous membrane; this will lend rigidity and semirigidity to the septum and thus minimize oscillations and eddies.
9. Interseptal cartilaginous transplants prevent contractures.
10. The advantages of the transfixion approach over the orthodox method of correction or reconstruction of the deformed nasal septum are manifold, in that submucous resection can be accomplished with greater ease and under direct vision.
11. It is the aim of the otorhinologist to achieve nasal functional efficiency as well as structural balance by means of rhinoplastic procedures.

RÉSUMÉ ET CONCLUSIONS

1. Les déformités du nez nuisent fréquemment à son bon fontionnement.
2. La blessure la plus fréquente intéresse le septum.
3. Le fonctionnement normal du nez dépend de son anatomie.
4. Même si la résection sous-muqueuse est un procédé moderne de chirurgie intranasale, elle ne présente qu'une partie de la réfection nasale.
5. On ne peut trop insister sur l'importance de bien replacer les cartilages latéro-supèrieurs pour une bonne respiration du nez.
6. Dans les cas où la voûte cartilagineuse inférieure est intéressée, il est évident que la sous-muqueuse seule est insuffisante pour rétablir une bonne voie aérienne à moins de corriger cette voûte cartilagineuse inférieure.
7. Dans le cas de nez en selle, le septum cartilagineux qui est réséqué devrait être utilisé comme greffe pour combler la concavité.
8. Pour prévenir la flacidité dù septum après une résection sous-muqueuse, il est essentiel de remplacer un ou plusieurs segments entre les volets de la muqueuse. Ceci obvierait aux oscillations en le rendant plus rigide.
9. La transplantation de cartilages prévient la constriction.
10. Les avantages de cette méthode par transfixion sur la méthode orthodoxe pour

corriger ou refaire un septum nasal déformé sont supérieurs par le fait que cette résection se fait plus facilement et avec plus de visibilité.

11. Le but de l'otorhinologiste est d'atteindre une excellente aération en même temps que de conserver une apparence conforme du nez par les moyens de chirurgie rhino-plastiques.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

1. Formveraenderungen der Nase beeintraechtigen haeufig die normale physiologische Nasenfunktion.

2. Am haeufigsten wird die Nasenscheidewand von Verletzungen betroffen.

3. Die normale Funktion der Nase haengt von anatomischen Verhaeltnissen ab.

4. Die submukoese Resektion ist zwar ein neuzeitiges Verfahren in der Nasenchirurgie, stellt aber nur eine Phase in der Wiederherstellung der Nase dar.

5. Es kann nicht genuegend hervorgehoben werden, wie wichtig die Angleichung der oberen Seitenknorpel an die knorplige Scheidewand zur Herstellung ausreichender Atmung ist.

6. Es ist klar, dass, wenn das untere Knorpelgewoelbe verletzt ist, die submukoese Resektion allein ohne Korrektur des unteren Knorpelgewoelbes die Atmungsfunktion nicht verbessern kann.

7. In Faellen, wo vor der Operation eine Sattelnase besteht, sollte der bei der submukoesen Resektion entfernte Septumkorpel zur Ausfuellung der Konkavitaet benuetzt und transplantiert werden.

8. Zur Vermeidung einer Erschlaffung der Nasenscheidewand nach submukoeser Resektion ist es wichtig, ein oder mehrere Segmente des resizierten Septums zwischen die Schleimhautlaeppchen wieder einzusetzen; dadurch wird der Nasenscheidewand Starrheit oder Halbstarrheit verliehen und das Auftreten von Vibrationen und Wirbeln verringert.

9. Durch die Einpflanzung von Septumknorpel werden Kontrakturen verhindert.

10. Die Vorteile der Durchstechungsmethode gegenueber der orthodoxen Korrektur der deformierten Nasenscheidewand sind mannigfach, weil die submukoese Resektion mit groesserer Leichtigkeit und unter direkter Leitung des Auges ausgefuehrt werden kann.

11. Das Ziel des Otorhinologen besteht in der Erreichung funktioneller Tuechtigkeit und strukturellen Ausgleichs der Nase mit Hilfe von rhinoplastischen Verfahren.

RIASSUNTO E CONCLUSIONI

1. Le deformita' del naso frequentamente intervengono alla funzione normale fisiologica nasale.

2. La lesione piu predominante nel naso attacca il setto.

3. La funzione normale fisiologica nasale e' dipendente sul parentado anatomico.

4. Sebbene resezione sottomucosa sia un passo moderno nel procedimento chirurgico intranasale, e' soltanto una fase nella ricostruzione nasale.

5. L'importanza di aggiustare le cartilagini superiori laterali al cartilagine settale affine stabilire respirazione convenevole non si puo' pronunziar forte.

6. Nei casi in cui il cavo cartilaginoso inferiore e' compromesso e' evidente che resezione sottomucosa per se non migliorera' facolta' respiratoria fuorche' il cavo cartilaginoso inferiore sia corretto.

7. Nei casi in cui un naso a sella é presente pre-operatorio, la cartilagine settale che e' rimossa durante resezione sottomucosa dovrebbe essere utilizzata e trapiantata affine di occupare la concavita'.

8. Per prevenire flaccidita' del setto dopo resezione sottomucosa, e' essenziale ricollocare un segmento o segmenti del setto risecato fra le falde della membrana mucosa; questo prestera' rigidita' e semi rigidita' al setto e cosi minima oscillazione e gorghi.

9. Trapianti cartaliginosi intersettali impediscono retrazioni.

10. I vantaggi del accesso a trasfiggere sopra il metodo ortodosso di correzione o ricostruzione del setto nasale difforme sono numerosi val a dire resezione sottomucosa

si puo' effecttuare con piu' facilita' e sotto visione diretta.

11. E'lo scopo del otorinologo di acquistare efficiente funzione nasale bene che bilancia di struttura per modo di procedimenti rinoplastici.

SUMÁRIO E CONCLUSOES

1. As deformidades do naris interferem frequentemente com as funções nasais fisiologicas normais.

2. O traumatismo mais comum do nariz involve o septo.

3. As funções fisiologicas do nariz dependem das relacões anatomicas.

4. Ainda que a ressecção submucosa seja um avanço entre os processos circurgicos intranasais, e' somente uma das fases da reconstrucão nasal.

5. A importancia de se ajustar as cartilagens supero-externas a' cartilagem septal de modo a' estabelecer bôa respiraeção não di ve ser exagerada.

6. Em casos nos quais a aboboda cartilaginósa inferior está envolvida, e' obvio que a ressecção submucosa, em si somente, não melhóra a funcão respiratoria, a menos que a arcãda cartilagino'sa inferior seja corrigida.

7. Nos casos em que um nariz em séla e' notado pre-operatoriamente, a cartilagem septal que e' removida durante a resseccão submucósa deve ser utilizada e transplantada, de módo a encher completamente a concavidade.

8. Para prevenir flacidêz do septo depois da ressecção submucósa é essencial recolocar o segmento ou os segmentos do septo ressecado entre as beiradas da membrana muco'sa; isto emprestará rigidez e semirigidez ao septo e assim diminuirá oscillações e redemoinhos.

9. Os transplantes cartilaginosos interseptais evitam contraturas.

10. As vantagens da abordagem por transfixão sobre o método orthodoxo de correção ou reconstrucão do septo nasal deformado são multiplas porque a ressecção sub-muco'sa po'de ser executada com a maior facilidade e sob visão diréta.

11. E'objetivo do oto-rino-laringologista conseguir eficiente funcionamento nasal tanto quanto equilibrio das estruturas por meio de processos rinoplasticos.

RESUMEN Y CONCLUSIONES

1. Las deformidades nasales interfieren frecuentemente la función nasal fisiológica normal.

2. La lesión nasal predominante interesa el tabique.

3. La función nasal fisiológica normal es expresión anatomofuncional.

5. Debe recalcarse la importancia de ajustar los cartílagos laterales superiores al tabique para establecer respiración adecuada.

6. En casos en que la bóveda cartilaginosa inferior se encuentra interesada, es evidente que la sola resección submucosa no mejorará la función respiratoria a menos que la bóveda cartilaginosa inferior sea corregida.

7. En casos de existencia preoperatoria dena riz en silla de montar, el tabique removido durante la resección submucosa debe utilizarse transplantándolo para llenar la concavida.

8. Para prevenir la flacidez del tabique por la resección submucosa, es esencial reemplazar un segmento o segmentos del tabique resecado entre los colgajos de la mucosa, lo que dará rigidez o semirigidez al tabique y por ende disminuirá las oscilaciones y desviaciones.

9. Los transplantes cartilaginosos interseptales previenen contracturas.

10. Las ventajas de la vía por transfixión sobre el método ortodoxo de reconstrucción o corrección del tabique nasal deformado son numerosas, pudiéndose efectuar la resección submucosa con mayor facilidad y a la vista.

11. El otorrinolaringologista debe obtener eficiencia funcional nasal tanto como equilibrio estructural por procedimientos rinoplásticos.

Fractures of the Forearm

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It has been stated, "There is no more distressing sight than that of stiff, shiny, atrophic fingers following a well-reduced wrist fracture, and there is no patient more difficult to rehabilitate."

Fractures of the forearm are among the most common and most frequent bone injuries. To obtain positive results in patients of all age groups, and in all fractures of the forearm except those that can be maintained with casts, those in the vicinity of the elbow joint and those in which there has been damage to the nerves or blood vessels at the time of injury, a technic has been adopted which has proved satisfactory in a series of 71 cases.

As in all successful fracture management, it is required, first, that the fracture be reduced; second, that the reduction be maintained, and third, that function be restored. In considering the first and second dicta of fracture management, the technic of reduction and its maintenance is the same in this series.

The patient is placed supine on the fracture table with the hand suspended by means of a finger trap attached to an overhead bar (Fig. 1). Countertraction is obtained by weights attached to the upper arm, which is held at right angles to the suspended forearm. The amount of weight used is sufficient to create 15 pounds (6.8 Kg.) of countertraction, which is indicated on the spring scale. In most cases this amount of weight maintained for approximately fifteen minutes will cause sufficient muscle fatigue and relaxation to permit the fragments to assume a normal anatomic position. The lines of force are directed through the center of the shaft of the radius. This technic is applicable to any fracture of the upper, middle or lower third of the radius, except fracture of the head and neck. In fractures of the shaft of the ulna the line of traction force would be shifted to the ulnar side by shifting the spring scale on the chain.

In fractures of both bones of the forearm it is mandatory that the ulnar fracture be reduced and fixed first, since the ulna is the fulcrum around which rotation of the forearm occurs. After the ulnar fracture has been reduced and fixed, the spring scale is shifted on the chain so that the lines of force are shifted to the radial side. The injured arm should be suspended in such a way that it may be approached for additional digital manipulation or open reduction as the case may require. In such an event the position of the arm need not be changed.

Rigid fixation with firm apposition of the fragments creates a physiologic state conducive to early firm union, and this is obtained by dual pinning and external bar fixation. The site of insertion of the pins depends entirely upon the site of the fracture (see illustrations). It is obvious that a fracture fixed in this manner permits greater freedom of the adjacent joints. The dressings around the pins are not attached to the skin; therefore there is no drag on weakened muscles and no tendency toward complicating conditions that may be provoked by immobilization. The patients are urged to resume their normal habits, such as feeding themselves, writing, or driving a car or tractor. Active motion is the best means of restoring function.

After removal of the pins there are various types of treatment available, all coming under the classification of physio-

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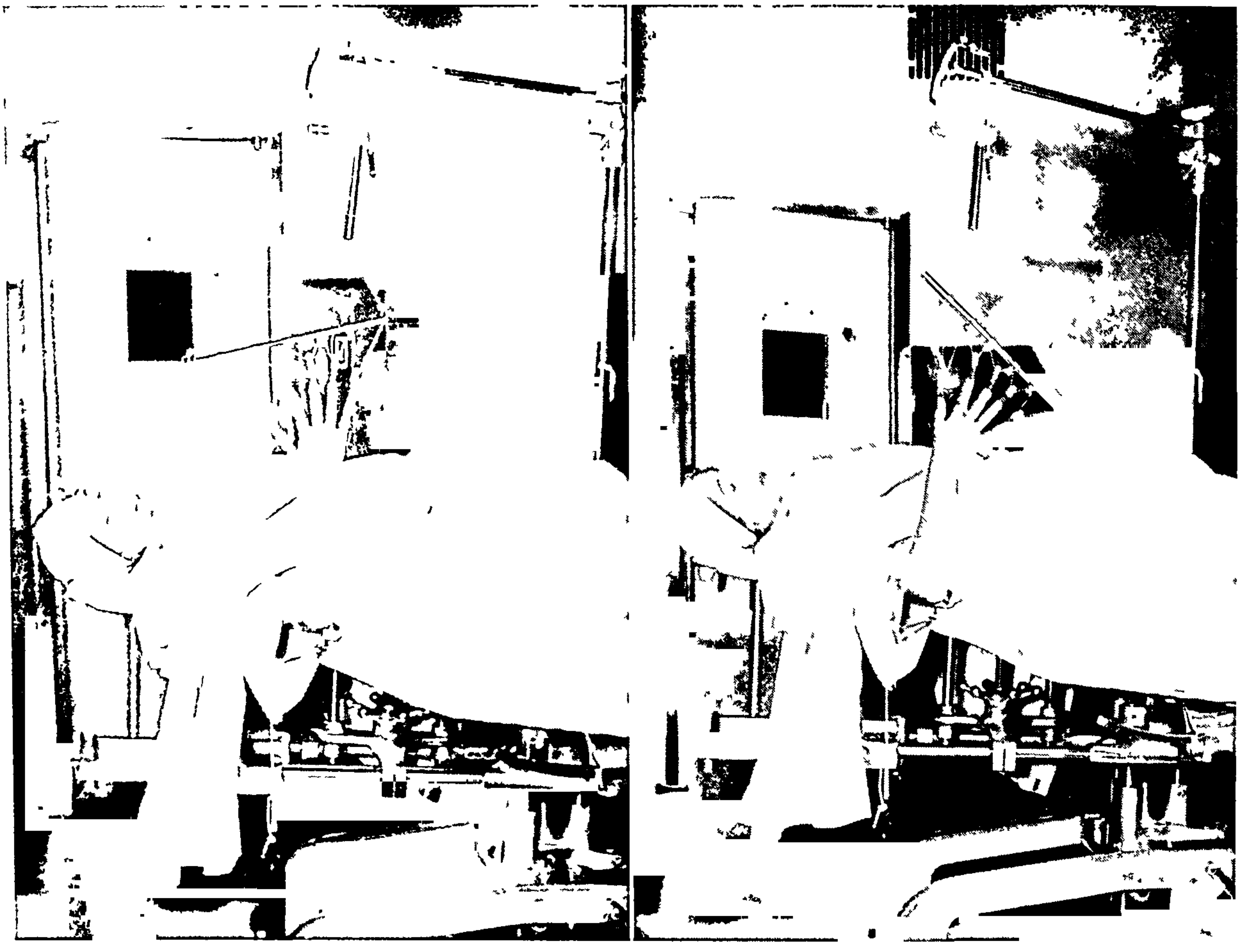

Fig. 1.—Patient in position on fracture table.

therapy. Massage has its place, but usually some form of active motion is preferred. Heat is of great value for its analgesic action and stimulation of the circulation. Physiotherapy is resorted to when the patient needs assistance in restoring normal function.

Illustrative Cases.—The following cases are pictorially presented to illustrate the different types of fractures of the forearm reduced and maintained by the technic just described.

Figure 2, *A* and *B*, illustrates a comminuted Colles' fracture, showing a flattening and dorsal tilt of the wrist joint with a fracture of the ulnar styloid.

The fracture was reduced and the normal angles of the wrist joint restored (Fig. 2, *C* and *D*). The comminuted fragments have assumed an almost perfect anatomic relation, and the articular surface is again smooth. Dual pins are shown in the metacarpal bone of the thumb, and counterdual pins are visible in the radius proximal to the fracture. Double bar fixation is employed between the pins.

Figure 3 shows the wrist with the dual pins and double bars in place. Note the normal contour of the forearm at the wrist and the minimal swelling. This patient returned to his work as a painter one week after injury.

Figs. 4 and 5 illustrate a similar fracture, for which a through-and-through pin was used in the metacarpal of the thumb, with a U-bar attached to the metacarpal pin.

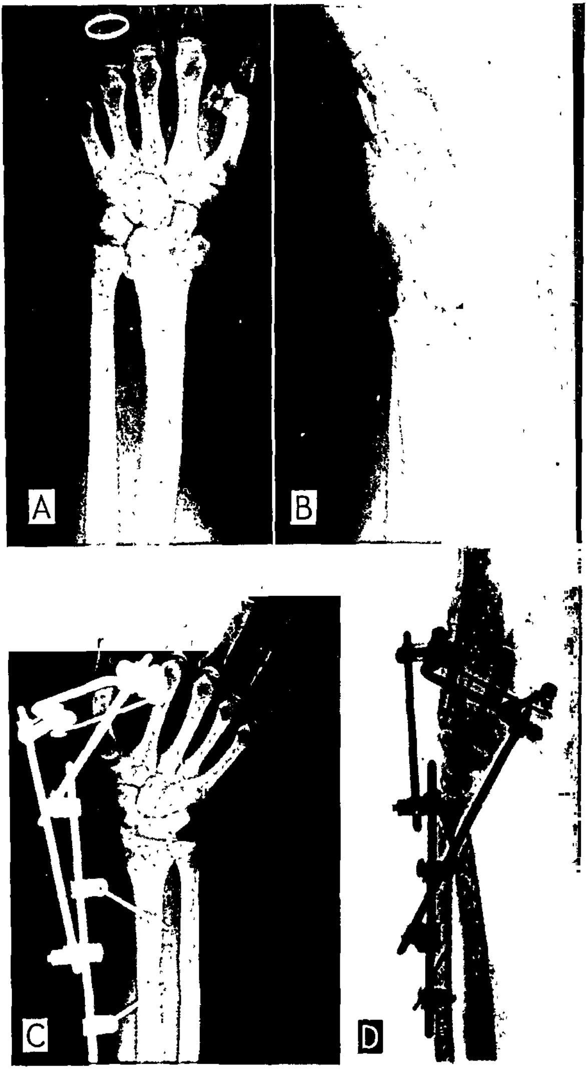

Fig. 2.—Comminuted Colles fracture (see text).

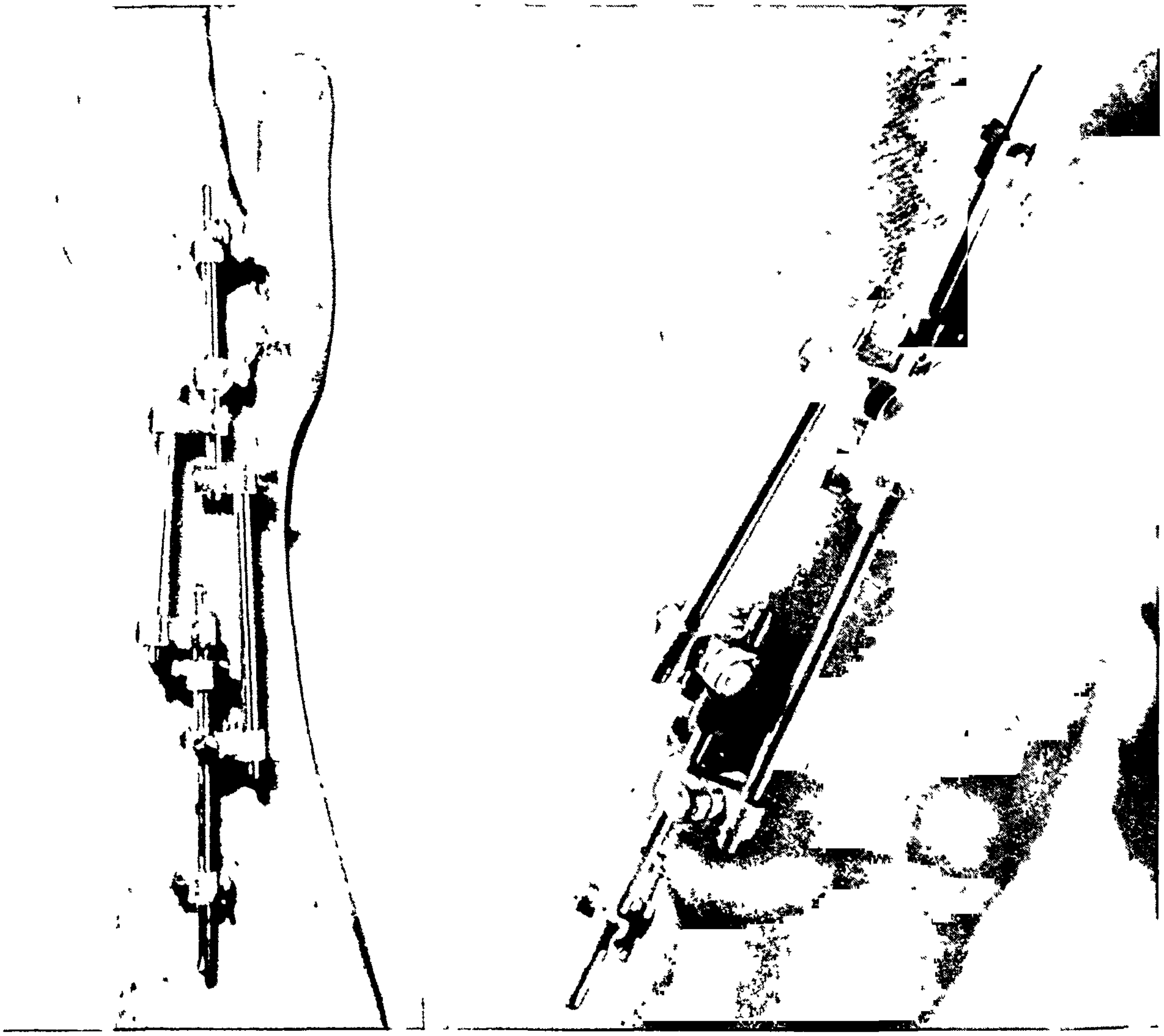

Fig. 3.—Wrist with dual pins and double bars in place.

The next case is that of a woman who reached into an automatic washer which was in full-spinning motion. The wet clothes enveloped her fingers. The clockwise motion of the spinner evulsed the hand at the wrist, compounding the forearm at the ulnar styloid (Fig. 6, *A* and *B*). The distal end of the ulna was projected forward 1½ inches (3.7 cm.) and came to lie over the carpal bones. Through this torsion the radius sustained a spiral fracture 2½ inches (6.2 cm.) long above the articulation of the wrist. The ulnar styloid is visible between the distal end of the radius and the ulnar shaft. The triangular ligament between the radius and ulna and the annular ligament was evulsed. The fracture was reduced by the traction and countertraction method and the ligaments were sutured. Normal relations between the radius and ulna, the ulnar styloid and shaft, and the radial fragments was established. Dual pins in the proximal and distal radial fragments with external bar fixation completed the procedure (Fig. 6, *C* and *D*).

A fracture of both bones of the distal third of the forearm with complete dislocation of the fragments is shown in Figure 7. Here, traction through the wrist

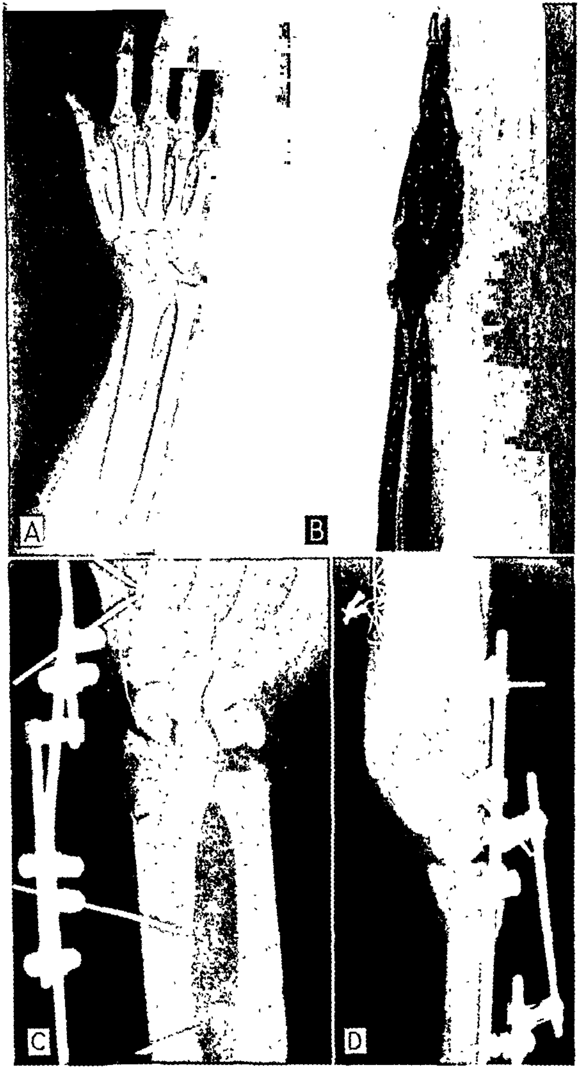

Fig. 4.—Roentgenograms of similar fracture treated with through-and-through metacarpal pin.

TABLE 1.—*Seventy-One Cases of Fracture of the Upper Third of the Radius**

No.	Age			Sex		Hosp. Days			Duration of Fixation			Anes.		
	Aver.	Oldest	Youngest	M	F	Aver.	Least	Most	Aver.	Least	Most	Pent. Sod.	Local	E & E
1	14	14	14	1		2	2	2	31	31	31	1	0	0

*Supplementary treatment, diathermy and massage; complications, none; average final rating of results, anatomic *B*, functional *A* and economic *A*.

TABLE 2.—*Fractures of the Middle Third of the Radius and Ulna**

No.	Age			Sex		Hosp. Days			Duration of Fixation			Anes.		
	Aver.	Oldest	Youngest	M	F	Aver.	Least	Most	Aver.	Least	Most	Pent. Sod.	Local	E & E
1	30.5	51	9	2	2	7.2	5	11	40	33	46	3	0	1

*Supplementary treatment: casts, 2; diathermy and massage, 1. Complications: 2 positive Kahn reactions; exploration 1 contracture of palmar fascia in presence of syphilis. Average final rating: anatomic, 2*A* and 2*B*; functional, 2*A*, 1*B* and 1*C*, economic, 2*A*, 1*B* and 1*C*.

TABLE 3.—*Fractures of the Lower Third of the Radius and Ulna**

No.	Age			Sex		Hosp. Days			Duration of Fixation			Anes.		
	Aver.	Oldest	Youngest	M	F	Aver.	Least	Most	Aver.	Least	Most	Pent. Sod.	Local	E & E
12	29.9	82	4	7	5	1.2	0	3	41	21	72	12	0	0

*Supplementary treatment: diathermy and massage, 5; ASE bandage, 1. Complications: traumatic neurocirculatory disturbance, with loss of reduction following premature removal of pins, 1; pin seepage and pin infection, 1. Average final rating: anatomic, 9*A*, 2*B* and 1*C*; functional, 11*A* and 1*C*; economic, 11*A* and 1*C*.

TABLE 4.—*Colles Fracture**

No.	Age			Sex		Hosp. Days			Duration of Fixation			Anes.		
	Aver.	Oldest	Youngest	M	F	Aver.	Most	Least	Aver.	Most	Least	Pent. Sod.	Local	E & E
51	51	89	6	21	33	3.9	73	0	41.2	69	20	51	3	0

*Supplementary treatment: application of splint, 1, diathermy and massage, 30. Complications: pin drainage, 6; chemical dermatitis, 1, positive Kahn reactions, 2, pin seepage and pin infection, 1; ischemic paralysis due to previously applied cast (present when pinned), 1. Average final rating: anatomic, 49*A*, 4*B*, and 1*C*; functional, 50*A*, 2*B* and 2*C*; economic, 52*A* and 2*B*.

joint with fixation through the metacarpal bone of the thumb was used, and countertraction with pins in the radius alone was proximal to the fracture.

Fig. 8*A* shows dual pin and external bar fixation of a fracture in the middle third of both the radius and the ulna. In this case the ulna was reduced and fixed first, as previously described. Traction was directed down the ulnar shaft during reduction. By shifting the scale on the chain, traction was moved to the radial side. Then the radius was reduced and fixed.

Fig. 8*B* shows a fracture at the junction of the upper and middle third of the radius. Reduction was obtained, as in the other cases, by traction and counter-

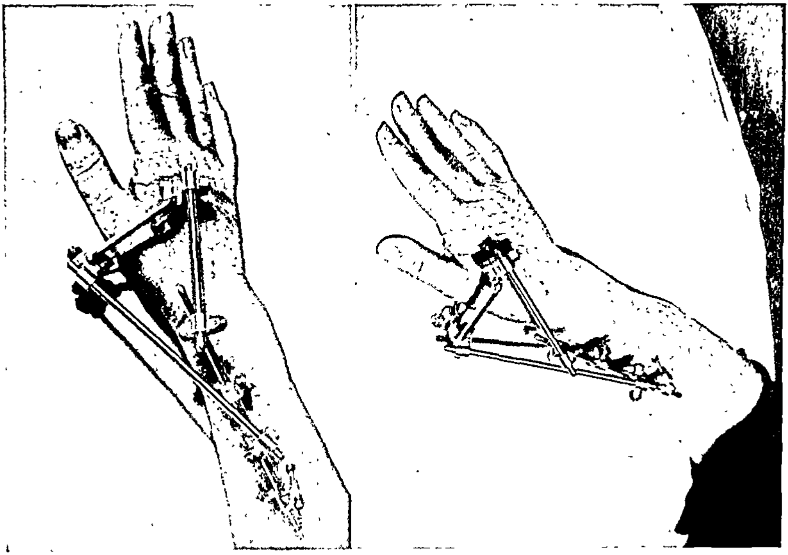

Fig. 5.—Photographs of wrist of same patient, with apparatus in place.

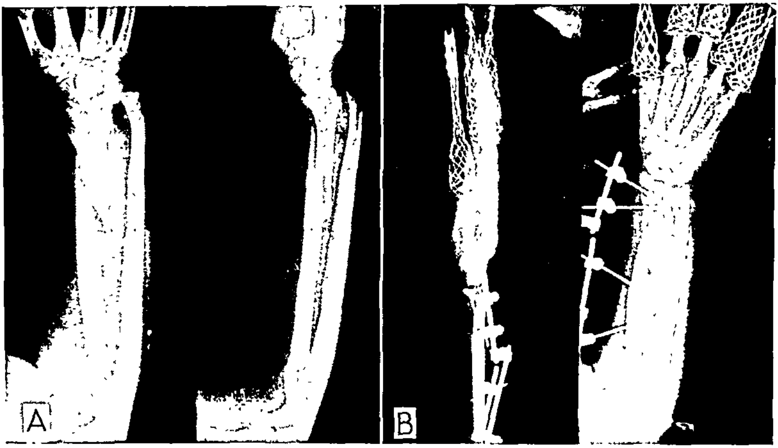

Fig. 6.—Fracture due to injury in an automatic washing machine (see

traction, with the line of traction through the center of the shaft. Maintenance of reduction was accomplished with dual pins and external bars (Fig. 8*C*).

End Results.—In this series of 71 cases the patients who were available were examined at the end of one year. Those who could not come in for examination were asked to report by letter. The results were classified as *A*, *B*, and *C*, with the following percentage rating: *A*, 87.5 to 100 per cent; *B*, 62.5 to 87.5 per cent, and *C*, 0 to 62.5 per cent.

A denotes anatomic rating, and the total was arrived at after considering length, alignment, apposition and angulation. *B* denotes functional rating. This was obtained by considering the following points: (1) total subjective functional result (as given by the patient); (2) total objective functional result; (3) joint movement above the fracture as compared to the other side, and (4) joint movement below the fracture as compared to the other side. *C* denotes economic rating, with consideration given to the following factors: 1. Same work as before, lighter or heavier. 2. Same pay as before, more or less. 3. Same hours of work, more or less. 4. Same volume of work, more or less.

A statistical report on the 71 cases is given in the accompanying tables.

In treating one fracture of the upper third of the radius (Table 1), a 14-year-old boy was hospitalized for two days and fixation maintained for thirty-one days. We prefer to use a general anesthetic, in order to obtain as much muscle relaxation as possible. Diathermy and massage were used. The rating on this case is *B-A-A*. The anatomic rating *B* was used because of less than 87.5 per cent approximation of the fractured fragments.

There were 4 patients with fractures of the middle third of the radius and ulna. Their average age was 30.5 years. The average stay in the hospital was seven and two-tenths days. A general anesthetic was used in all cases. The duration of fixation averaged forty days. Light casts were applied to prevent bowing in 2 instances. One patient had physiotherapy. Two patients with positive serologic reactions were given antisyphilitic treatment. In 1 patient a claw hand developed; the forearm was explored to check for interposition of the nerves between the fractured fragments, but none were found. In this group, anatomically, there were 2 cases rated *A* and 2 rated *B*; functionally, 2 were rated *A*, 1 *B* and 1 *C*. The economic rating was *A* in 2, *B* in 1 and *C* in 1 (Table 2).

Twelve patients had fractures of the lower third of the radius and ulna (Table 3). The average age was 29.9 years and the average hospital stay was one and one-half days. Pentothal sodium was used for anesthesia in all cases.

In considering the complications, 1 patient, aged 75, had a neurocirculatory disturbance and active osteoarthritis with a high sedimentation rate. The pins and external bars were removed early to facilitate hydrotherapy, which caused loss of some reduction. The patient's interpretation of her results is *A* functionally and economically; our rating, however, is *B-C-C*. In 1 case there was slight seepage around the pin and infection, but healing was complete in one week. The final ratings in this group are, anatomic, 9 *A*, 2 *B* and 1 *C*; functional, 11 *A* and 1 *C*; economic, 11 *A* and *1* C.

There were 54 cases of Colles' fracture. This fracture is common to all ages and to both sexes. It requires little or no hospitalization. The average age was 51, the oldest 89 and the youngest 6 years. The average hospital stay was three and nine-tenths days; 1 patient had other serious injuries and was in the hospital for seventy-three days. An average of forty-one and two-tenths days of fixation was necessary for visible callus formation. Fifty-five per cent of the patients required physiotherapy, and about 20 per cent had complications. One patient had ischemic paralysis, present when pinning and skeletal fixation were done, which was due to a previously applied cast. One pa-

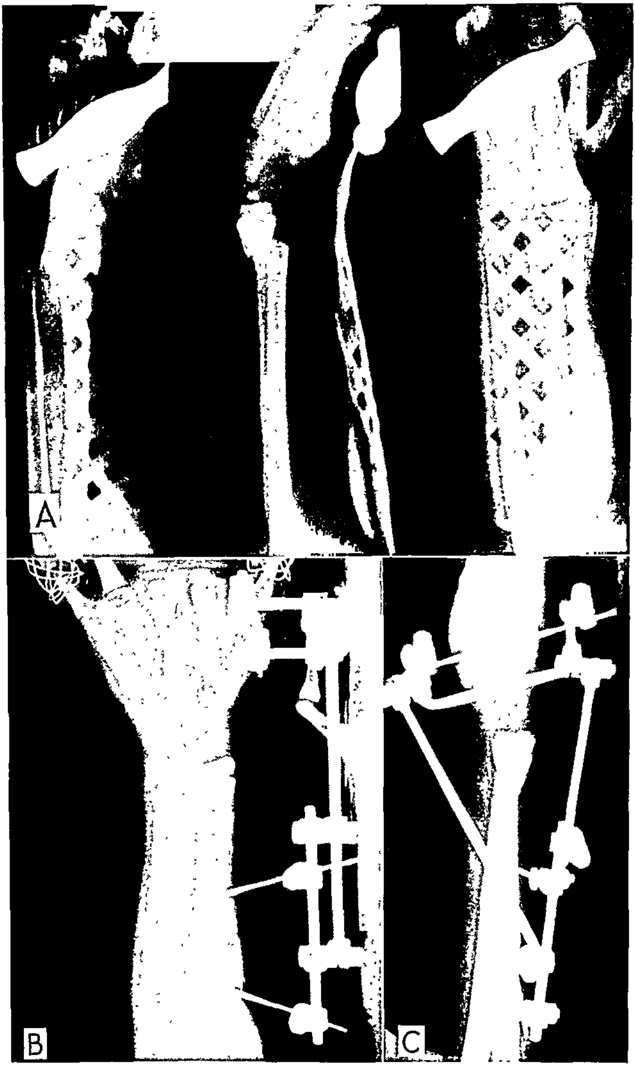

Fig. 7.—Fracture of both bones of distal third of forearm.

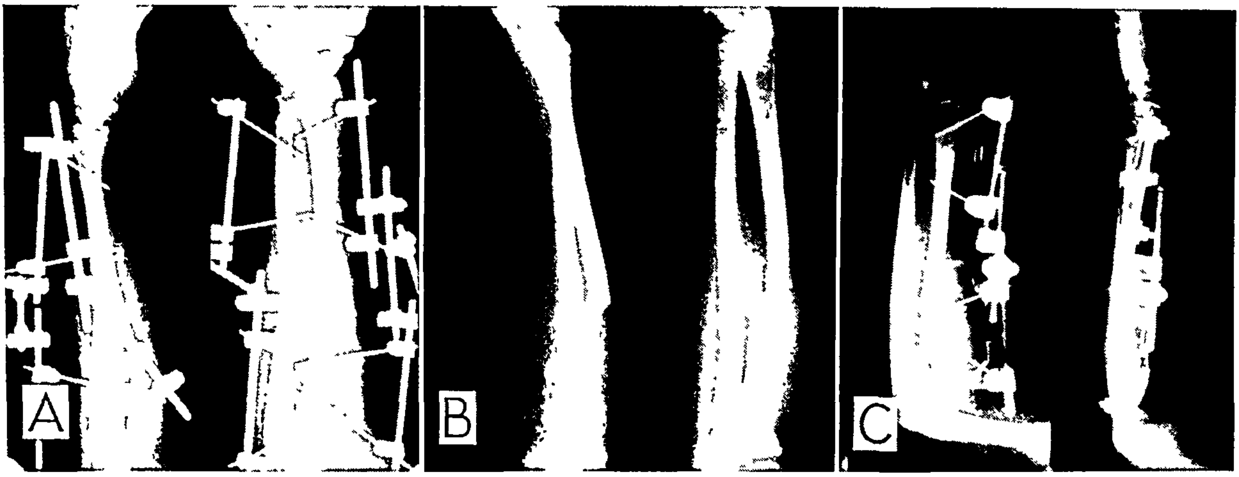

Fig. 8.—Dual pin and external bar fixation of fracture of middle third of both radius and ulna.

tient had a chemical dermatitis. One patient had pin seepage and infection. Six patients had pin drainage. Two patients had positive Kahn reactions. There were 80 per cent excellent results, 15 per cent good results, and 5 per cent poor results (Table 4).

RÉSUMÉ

On rapporte un procédé simple et précis pour la réduction des fractures de l'avant-bras. On se sert d'appareil de traction et de contention, de clous et d'une barre extérieure de fixation. L'auteur se réjouit de ses résultats.

ZUSAMMENFASSUNG

Es wird eine einfache Technik zur Einrichtung von Unterarmbruechen beschrieben. Das Verfahren bedient sich des Zuges und Gegenzuges, eines Doppelstifts aund aeusserer Fixierung mittels einer Stange. Durch die Anwendung der Methode haben sich die Resultate der Verfasser erheblich gebessert.

SUMÁRIO

Uma tecnica simples e positiva para redução de fraturas do ante-braço é apresentada. O método utiliza a tração e a contra-tração, pinos duplos e barra de fixação externa. Os resultados finais do autôr têm sido grandemente melhorados pelo seu uso.

RESUMEN

Se presenta una técnica sencilla y positiva para la reducción de fracturas del antebrazo. Se emplean tracción y contraextensión, dos clavos y fijasión externa on harra. Ha mejorado grandemente los resultados de los autores.

RIASSUNTO

E' presentata una semplice e sicura tecnica di riduzione di fratture dell'avambraccio. Il metodo fa uso di estensione e contro-estensione, di un doppio chiodo e di una barra esterna di fissaggio. I risultati finali dell'Autore sono stati grandemente migliorati dall'uso di tale metodo.

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Stellate Ganglion Block in Treatment of Acute Subdeltoid Bursitis

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ACUTE subdeltoid (subacromial) bursitis is often severely incapacitating, with intense pain and discomfort. The patient may request emergency orthopedic care to secure immediate relief of the distress and disability, often of two to six weeks' duration, with resultant economic loss.

Methods and means of treatment now generally in use—diathermy, infra-red baking, roentgen therapy, moist warm packs, liniments, procaine infiltration, needling and aspiration—do not produce prompt, lasting relief but usually require an extended period of therapy (several weeks) before the extremity returns to normal function. Needling and aspiration are often effective means of evacuating calcareous deposits, but there is often considerable local soreness and discomfort for three or four days afterward. Excision of the bursa is, of course, an excellent method of treatment, but it involves hospitalization and increased expense and loss of time.

The use of parasympathetic nerve block in treatment of neurovascular diseases and injuries of both upper and lower limbs has steadily increased in recent years. Impetus was given by extensive experience in World War II, when numerous surgeons were forced to learn the procedures in order to save limbs after severe vascular injury. In addition, stellate ganglion block is being used in the relief of angina pectoris, causalgia or reflex sympathetic dystrophy of the upper extremity, and—quite spectacularly of late—in the emergency treatment of cerebral vascular occlusions and thromboses.[1]

The use of stellate block for subacromial bursitis and other painful conditions of the upper extremities is not new. De Sousa Pereira[2] in 1945, followed by Caldwell, Broderick and Rose[3] in 1946, reported encouraging results in the management of significant numbers of cases. However, there has been little general acceptance of this technic, probably owing to lack of familiarity and resultant apprehension. In Caldwell's series of 18 cases of acute subdeltoid bursitis treated solely with stellate ganglion blocks, there were 83.3 per cent excellent and 16.7 per cent good results. Fifty per cent of patients obtained considerable relief after only a single block, and all were relieved by one or two additional blocks at intervals of one to seven days. Less striking relief was reported in cases of the chronic condition.

The results in the 36 cases of acute subdeltoid bursitis herein reported closely parallel those of Caldwell's series: 88.9 per cent of the patients were completely well within seven days; 4, or 11.1 per cent, were much improved in the same period and completely relieved in an additional two weeks, after a few physical therapy treatments following their return to work. Stellate blocks were employed as a therapeutic adjunct in the management of 10 cases of chronic subdeltoid bursitis, in some of which adhesive capsulitis was present, the results were also favorable and encouraging, although less dramatic than those obtained in the "acute cases." Discomfort was definitely alleviated, and shoulder motion was more quickly restored than is generally observed after physical therapy alone.

Rationale.—The intense pain and limited shoulder motion associated with acute subdeltoid bursitis arise from the swollen, edematous bursal sac plus exudate in the bursa and the tendinous shoulder cuff.

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These impinge under the acromion process with rotation, elevation or depression of the shoulder and result in stimulation of the abundant sensory nerve endings in this area. The local swelling and exudation result from persistent constriction of the arteriolar bed and prolonged or intense vasoconstriction of the venocapillary bed, leading to dilatation and stasis, followed by diapedesis of plasma or cellular elements. A reflex arc is established, in which nerve impulses from a region of tissue injury produce reflex constriction of precapillary sphincters, "shunting" of blood through arteriovenous capillaries and arteriovenous anastomoses, and collapse of the true capillaries. The vasospasm gives rise to tissue anoxia, resulting in increased capillary permeability and transudation of excessive amounts of fluids through the capillaries to produce edema. The paralyzed capillary bed fails to respond to direct stimuli; this is similar to the anoxic permeability and diapedesis of blood elements in the sludging of blood in patients with frostbite, malaria, etc.

The ganglion block breaks the reflex arc which produced constriction of the precapillary sphincters and thereby interrupts the venocapillary paralysis, stasis and diapedesis. The more nearly normal flow of blood through the true capillaries and the consequent increase in lymph flow relieves edema and pain and explains the prompt symptomatic relief usually observed after stellate block. Although in the large majority of cases there are dense calcareous deposits which undoubtedly have been accumulating asymptomatically for many months, acute symptoms are not manifested until there is a superimposed inflammation of the soft tissues, perhaps from unnoticed minor trauma, such as a bump on the shoulder, strain while lifting or stretching overhead in a closet, etc. The role of infection is vague and probably overemphasized. As there appears to be no change in the roentgenographic appearance of these calcium deposits for several weeks after all symptoms have cleared and as, in some cases, no such degeneration is present, it is my opinion that this cannot be the exciting or principal cause of the intense pain and restricted motion accompanying acute subdeltoid bursitis. Rather than direct the primary therapeutic attack at removal of the calcium deposit, it appears more rational to induce intense vasodilation and increased oxygenation and lymph flow to the affected tissues, and thereby evacuate the transudates and exudates which appear to be the immediate cause of disability. The calcareous deposits are slowly absorbed in a period of several months to a year—possibly aided by the improved local circulation, although the exact pathomechanism is not clear.

Technic of Injection.—There are several approaches to injection of the stellate ganglion. The effect is identical no matter which technic is employed, but it is of course important to learn and adopt the one method which is easiest and safest in the hands of the individual operator. This particular problem has prevented general use of this valuable procedure; the technic herein described and advocated, therefore, will be explained in detail.

Anatomic Features.—The stellate ganglion is formed by the fusion of the inferior cervical and first dorsal sympathetic ganglia and lies on the anterolateral surface of the bodies of the seventh cervical and the first thoracic vertebrae, between the head of the first rib and the vertebral artery. Frequently it is 2.5 cm. long, but it varies considerably in size. The cervical sympathetic trunk above the ganglion lies on the deep fascia covering the longissimi capitus and colli muscles, which is continuous with the fascia anterior to the scalenus anticus muscle. In the same plane, but laterally, lies the phrenic nerve; anteriorly is observed the carotid sheath (internal jugular vein, vagus nerve and carotid artery) and inferiorly, the dome of the pleura, which extends above the clavicle anteriorly and to the lower edge of the first rib posteriorly.

It is highly desirable to block not only the stellate ganglion but the intermediate

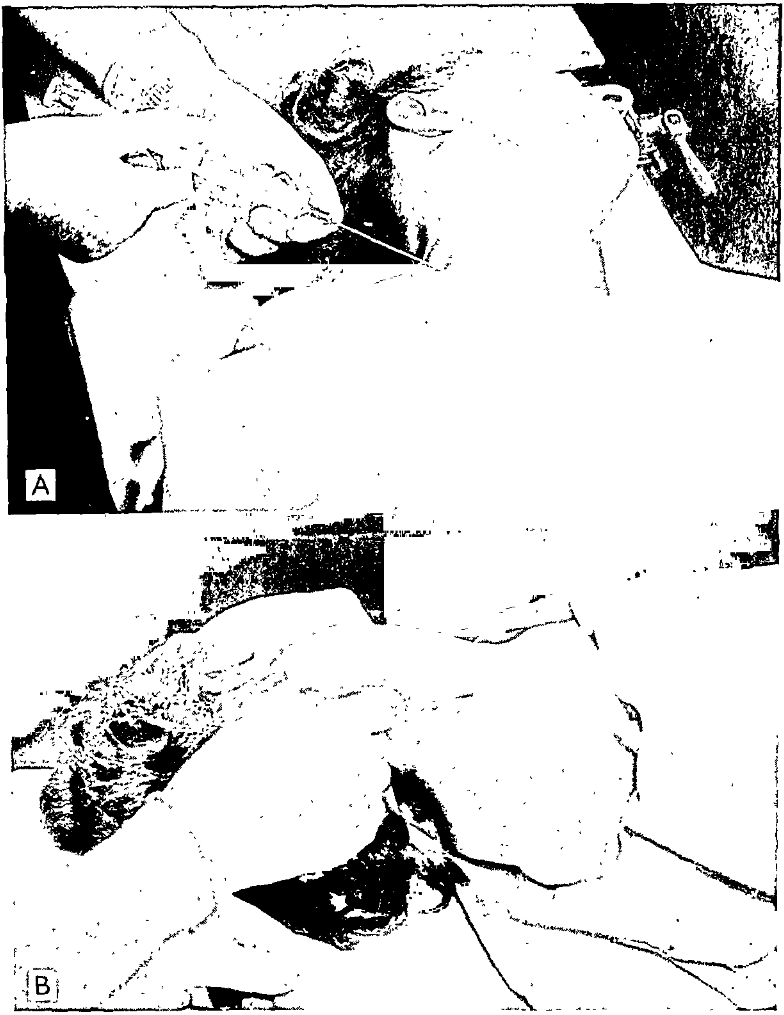


Fig. 1.—*A*, position of needle in relation to clavicle and posterior border of sternocleidomastoid muscle and external jugular vein. *B*, position of patient for injection and direction of needle. Note pillow under shoulders and head turned to opposite side.

and middle cervical ganglia which lie superiorly between the sixth and seventh cervical vertebra and contribute postganglionic neurons to the upper extremity. De Sousa Pereira has demonstrated that a block of this entire anatomic and physiologic group achieves complete interruption of the vasomotor and afferent pathways and results in the most intense vasomotor effect in the upper extremity and the thorax.

Thus, it is apparent that the optimum method is not one directed at the lowermost segment, the stellate ganglion, but one that will block all three ganglia in a single injection. Early workers attempted the difficult and dangerous anterior approach, beginning just above the clavicle and pointing the needle toward the head of the first rib in an attempt to block the stellate ganglion directly. Leriche and Fontaine adopted this technic in 1934, after the posterior approach advocated by Labat in 1924 (and later by Mandl and White[2]) was deemed unsatisfactory because of occasional contact with the pleural cavity as the needle passed between the parietal pleura and the body of the first thoracic vertebra.

The supraclavicular approach was later modified by Ochsner and DeBakey, Volpitto and Risteen, and others, in an effort to reduce the painful discomfort and frequent vasomotor, neurologic and pleuropulmonary complications that often made patients reluctant to submit to repeated blocks.[3]

The best method appears to be one in which the anesthetic solution is injected above, in the region of the sixth cervical level or the disc between the sixth and the seventh, and then allowed to infiltrate downward by gravity, through the fascial planes and along the sympathetic trunk to the lowermost stellate ganglion, thus blocking the entire group with one injection. The middle cervical ganglion is immediately blocked, as it lies in the area of the direct injection on the body of the 6; the solution then descends through the prevertebral aponeurosis, in which the cervical sympathetic chain is located, into the soft cellular tissues surrounding the vertebral artery and then into the intermediate and stellate ganglia. Properly done, this method is considerably safer and technically less difficult than the direct injection, and, in addition, the position of the middle cervical and stellate ganglia has a fairly constant relation to the sixth cervical vertebra. An injection just below the sixth cervical level will probably diffuse upward sufficiently from the force of the injection to reach the middle cervical ganglion, and then gravitate through the same fascial plane.

Anterolateral Approach (Murphey).—In the beginning of this series, injections were performed by both the anterior approach of De Sousa Pereira and the anterolateral method of Murphey.[4] It was quickly noted that patients complained of choking from the finger pressure required to displace the carotid sheath in the anterior technic, and also that unsuccessful blocks occasionally occurred. Therefore, the anterolateral technic of Murphey was used in most cases, as it was found to be more effective, less uncomfortable, and technically as easy as the other method. A successful block was obtained in every case, although in a few it was necessary to make a second injection of 5 additional cc. of procaine hydrochloride; this was easily accomplished without discomfort, as the area was already anesthetized.

Briefly, this method consists of placing the patient in the supine position, with the head turned to the opposite side and the neck hyperextended by a small firm pillow under the shoulders. The site of injection is determined by palpating the posterior border of the clavicular head of the sternocleidomastoid muscle, just posterior to the external jugular vein, which crosses the lateral edge of the scalenus anticus muscle at the level of the cricoid cartilage (C-6). The scalenus anticus and medius muscles will be palpated deeply here as a triangular interval. A skin wheal is raised, and then a 22 gauge, 2½ to 3 inch (6.2 to 7.6 cm.) needle is directed medially, posteriorly and inferiorly at an angle of 15 to 20 degrees, procaine hydrochloride being injected as the needle penetrates. If the patient complains of sharp, shooting pains in the arm or hand, the needle is too far posterior and is striking the lower branches of the brachial plexus; in this region it also may pierce either the vertebral or the inferior thyroid artery, as is revealed by a bloody aspiration. Should either occur, one merely withdraws the needle 1 or 2 cm. and directs it more anteriorly, passing over the transverse process and finally lodging firmly against the body of the sixth or seventh cervical vertebra or the intervertebral cartilage, at a depth of 3.5 to 6.0 cm., varying with the thickness and length of the neck. Firm resistance is noted as the needle strikes the anterolateral surface of the body of the vertebra, demonstrated by rotating the syringe and needle. Occasionally, if the patient has a short neck, the needle lodges on the body of the first thoracic vertebra, but the higher injection is safer and preferable. Should the needle pass medially to its full depth without striking bone, it is anterior to the body, and the angle must be corrected posteriorly. Usually this causes no serious difficulty other than discomfort or a swallowing sensation in the throat, or pain in the posterior neck or scapular region from irritation of the prevertebral fascia. Neither a bloody aspiration nor an anterior penetration should ordinarily interrupt the procedure.

Before injecting, one withdraws the needle sufficiently to free the tip from the periosteum. Precautionary measures are then taken: 1. Aspirate for blood or spinal fluid, to avoid a fatal subarachnoid injection (often without warning pain). 2. Have the patient inspire deeply with the syringe detached to watch for a sucking effect due to penetration of the pleura. A further safety procedure is the initial injection of only 1 cc. followed by observation for thirty seconds to note any unfavorable response. If none occurs, 6 to 10 cc. is injected, the needle being withdrawn slightly with the last few cubic centimeters in order to place the fluid in the proper fascial plane. Then the patient is immediately brought to the sitting position and the site is gently massaged downward.

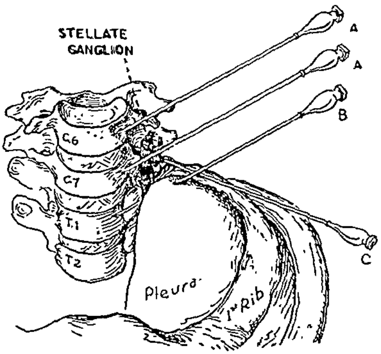


Fig. 2.—Anterolateral approach to stellate ganglion block. *A*, needle correctly inserted against anterolateral surface of body of sixth or seventh cervical vertebrae, or disc between C-6-7. Skin puncture made well above clavicle, needle angled 15 to 20 degrees inferiorly and posteriorly, avoiding dome of pleura. *B*, needle directed caudally in an unnecessary search for first rib. This may puncture pleura, with resultant pneumothorax, or lung, with resultant hemoptysis or massive collapse. *C*, needle directed cephalad, with danger of piercing dural cuff or nerve roots or entering intervertebral foramen and puncturing subarachnoid space or spinal cord. This may be painless but can be fatal. (*Adapted from Gilbert and de Takats, by permission.*)

The solution used was usually 2 per cent procaine hydrochloride, although several patients were treated with 2 per cent metycaine, procaine with epinephrine, and 0.15 per cent pontocaine with 2 per cent procaine in an effort to secure a more prolonged blocking effect. It was thought that, if the immediate effect of procaine were combined with the sustained (four to five hours) effect of pontocaine, the number of injections required could be diminished, but little difference was noted in the final results with and without pontocaine. Although there was no reduction in the number of blocks required to effect complete relief of symptoms, there was a definite lengthening of each block and relief of pain lasted longer than with procaine alone.

In most cases nembutal or seconal (gr. 3/4) was given three quarters of an hour before the injection, to reduce anxiety and as a prophylaxis against toxic reactions to procaine.

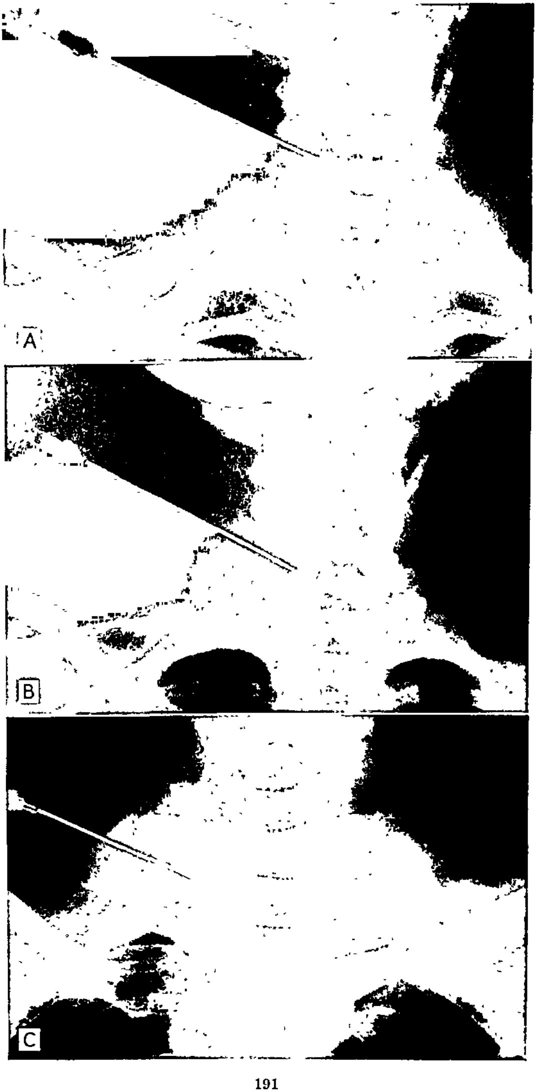
A successful block is manifested by early conjunctival congestion and Horner's syndrome—ptosis of the upper lid, narrowing of palpebral fissure and slight elevation of the lower lid, miosis, and anhidrosis of the face and forehead. Subjective and objective warmth and redness of the forearm, hand and shoulder soon follow. These signs may appear almost as soon as the patient becomes erect, or (more commonly) within three to ten minutes. If there are no ocular changes within ten minutes the injection should be repeated, with a slight change in the direction of the needle. Some vasomotor changes may occur even without an accompanying Horner's syndrome, owing to the blocking of the middle and intermediate cervical ganglia without blocking of the stellate ganglion; this is due to insufficient diffusion of the anesthetic. Often it results in an increased range of active and passive motion and relief of pain, but it is less effective than complete block.

The technic originally employed consisted of two or three blocks at intervals of one to three days, but this has recently been modified to repetition of the block at twenty-four hour intervals for a total of three blocks. Only rarely has a fourth block been required to clear mild residual symptoms, and this usually is administered forty-eight hours after the third injection. In no case have more than four blocks been performed, and only 3 patients have required this number.

Complications.—There were no serious complications in this series, but several minor reactions were occasionally observed. These included: (1) transitory pain with piercing of the prevertebral fascia; (2) temporary paresis of the upper extremity from extension of the anesthesia to the lower brachial plexus and (3) procaine reaction. With regard to the complication last mentioned, there was an intensely nervous and hysterical type of reaction which subsided within a few minutes, possibly from a partial intra-arterial injection; a second injection the following day was without incident. Vertigo, or a sort of "drunken" sensation, is not uncommon for fifteen to thirty minutes after the injection, possibly owing to the resultant temporary imbalance of the autonomic nervous system and to cerebral vasodilation. Stiffness or soreness at the site of injection (perhaps from a mild hematoma) may occasionally occur but is easily relieved by warm moist packs.

More serious complications have been observed by other surgeons but can be avoided by strict adherence to routine precautions. Among these are (1) pneumothorax and hydrothorax; (2) subarachnoid injection, and (3) anesthesia of the phrenic nerve with unilateral diaphragmatic paralysis. In some of the older anterior technics the needle was directed caudally in an unnecessary search for the first rib, with resultant puncture of the pleura or the lung and pneumothorax, massive collapse of the lung or hemoptysis. If the needle is directed cephalad it may well enter the intervertebral fora-

Fig. 3.—Roentgenograms (retouched for clarity) of actual injection with needle in *situ*. *A*, Injection against body of C-6. Full Horner's syndrome produced in two minutes after patient allowed to sit up. *B*, injection against body of C-7. Horner's syndrome within two minutes. *C*, injection against body of T-1. Immediate Horner's syndrome. Injection more dangerous at this level than at C-6. More rapid onset of block is of no particular advantage. Injection at level of C-6 or C-7 is preferable. Solution descends by gravity and diffusion to level of stellate ganglion. Block of intermediate and middle cervical ganglia also obtained by higher injection, resulting in more intense vasomotor effect to upper extremity.


A
B
C

men and puncture the cord, or the dural cuff about the nerve roots—such an injection could be fatal! Bilateral blocks should never be done, because of the danger of phrenic nerve paralysis.

Thus, stellate ganglion block has potential dangers, especially in a large hospital service with numerous operating surgeons of varying experience. They can be minimized by accurate placement of the point of the needle, testing for pleural penetration by deep inspiration, and a small test injection; frequent aspirations should always be a routine part of the injection technic. The injections can be done as an outpatient service but should always be performed in a hospital or clinic where emergency resuscitation measures are available.

Results.—Immediately after the stellate ganglion is blocked, the involved arm can be slowly raised, passively, without great discomfort, through a surprising range of abduction and external rotation and a lesser arc of internal rotation. A common observation is an increase in motion from almost 0 to 90 degrees of abduction, 45 to 60 degrees of external rotation, and 15 to 20 degrees of internal rotation. Sometimes there is still a sharp pain or "catch" with lowering of the arm, as the inflamed bursa impinges under the acromion process. This immediate improvement is most dramatic in cases of the most severe involvement, with swelling, local tenderness, redness, and restricted motion. The patients in such cases are usually amazed at their newly found ability to raise the extremity without excruciating pain, although timidity and defensive muscle spasm may still be exhibited.

Current statistics show considerable variation in the range of motion and degree of relief from pain secured after each successive block. Some patients evinced 75 to 90 per cent relief from the very first block; others responded to this extent only after a second injection. Generally there was pronounced relief of pain, with somewhat less marked increase in range of motion. Internal rotation was usually the last shoulder motion to regain its full range, occasionally requiring a few stretching exercises. Subacromial tenderness and a "catching" sensation were the last signs to disappear in most cases.

Patients with a history of previous shoulder pain or definite episodes of bursitis, with or without treatment, generally responded more slowly to stellate block therapy and required additional physical therapy—infra-red treatments or diathermy, massage, over-head stretching, and pendulum exercises to promote internal and external rotation.

Ten chronically involved patients were treated with stellate blocks with definite improvement, less pain, more comfort in the involved shoulder, and facilitated motion. In their cases the procedure was a therapeutic adjunct rather than specific as in the "acute cases."

Although this is admittedly not a large series and consists solely of private patients without benefit of a large ward or clinic service, the distribution of male patients in a 2.1 ratio, concentrated in the third and fourth decades of life, conforms with the accepted statistics. This incidence lends some credence to the commonly accepted etiologic role of trauma. Further evidence of degenerative influences, often associated with trauma, is the presence of calcareous deposits in 85 per cent of the cases studied. However, few patients recall any specific injury, so that the trauma, if it be the precipitating agent, is probably in the form of repeated, mild, unrecognized blows or strains.

Throughout the series it was repeatedly observed that the most dramatic results were secured in the patients who were seen earliest after onset of their first shoulder symptoms. Such patients required less therapy and recovered with least loss of time from regular duties.

In only 2 cases of mild involvement were the patients treated by stellate block, as these patients do not usually come to the attention of an orthopedist, nor do they ordinarily require anything beyond a few

*Relief of Pain and Restoration of Shoulder Motion**

	Interval After Beginning Therapy	25%	Patients Number of Cases 50%	Responsive 75%	100%
Mild (2)	24 hours		1		1
	48 hours			1	1
	72 hours				2
	1 week				2
Moderate (15)	24 hours	8	4	2	1
	48 hours	1	6	5	3
	72 hours	1	0	8	6
	1 week			2	13
Severe (19)	24 hours	2	14	3	0
	48 hours		3	16	0
	72 hours		1	12	6
	1 week			2	17
Composite	24 hours	10	19	5	2
	48 hours	1	9	22	4
	72 hours	1	1	20	14
	1 week			4	32

*All estimates by author based on recorded degrees of motion, tenderness and swelling, subjective and objective estimates of pain by doctor and patient.

physical therapy treatments. One was completely relieved within twenty-four hours by a single injection, and the other in seventy-two hours by two blocks.

In the cases of moderate involvement progress was more rapid after a second block in twenty-four hours. Within seventy-two hours 40 per cent were completely well, and 86.6 per cent were restored to normal function in one week, leaving only 2 patients (13.4 per cent) with mild restriction of motion or slight pain. In the majority of cases only two blocks were required.

The immediate relief of pain was more dramatic in patients with the severe conditions, possibly owing to the more striking contrast. Seventeen, or 89.4 per cent, had only mild residual evidence of pain and restricted motion after forty-eight hours (usually three stellate blocks), and 6, or 31.5 per cent, had a normally functioning shoulder after seventy-two hours. After one week this percentage had risen to 17 of 19 patients (89.4 per cent) back to normal, only 2 patients (10.6 per cent) having mild residual discomfort. Three stellate blocks were generally required for those in whom the condition was severe.

Thus, excellent results were secured in 32 cases, or 88.9 per cent; in only 4 cases (11.1 per cent) of the total series of 36 acute cases did the patients not have complete relief of all symptoms and signs within seven days of the beginning of stellate block therapy. In all 4 a few physical therapy treatments, such as diathermy or infra-red, massage, and stretching exercises completely alleviated all symptoms within an additional two-week period, during which time all had returned to their regular employment.

Twenty-five cases have been followed for periods of one to four years. There have been no recurrences in the severe group but in the moderate classification there were mild recurrences of shoulder pain and muscle spasm in 2 cases, one seven months after treatment and the other one year later. Both promptly responded to a single physical therapy treatment.

Eighteen patients returned for roentgen examination after intervals of six to eighteen months; in 16, or 88.8 per cent, all (or all but a minute fleck in 3) of the calcium deposit was absorbed; in only 2 cases was the calcareous deposit unchanged (both in periods of eight to nine months), but in neither case had there been a recurrence of symptoms. Although absorption of calcareous deposits is known to occur spontaneously or after local needling and aspiration, the high correlation present in this series would appear to be significant.

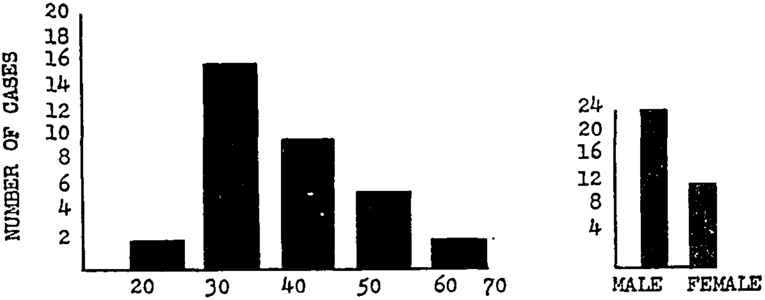
COMMENT

Acute subdeltoid or subacromial bursitis, with or without calcareous tendinitis or peritendinitis, is a painful and incapacitating disorder of rather frequent incidence in the third and fourth decades of life. It is more common in the male, in the ratio of 2:1. The exact cause cannot always be well established, although minor unrecognized trauma is believed to be a prime factor. The intense pain, discomfort and limited shoulder motion result from local swelling and exudation following prolonged and intense vasoconstriction, dilatation and stasis of the venocapillary bed, with secondary diapedesis of cellular and plasma elements and persistent arteriolar constriction. Shoulder joint motion is limited by impingement of the swollen, inflamed, sensitive soft tissues of the subacromial bursa (and perhaps the tendinous shoulder cuff) against the acromion process as the arm is raised, rotated or lowered.

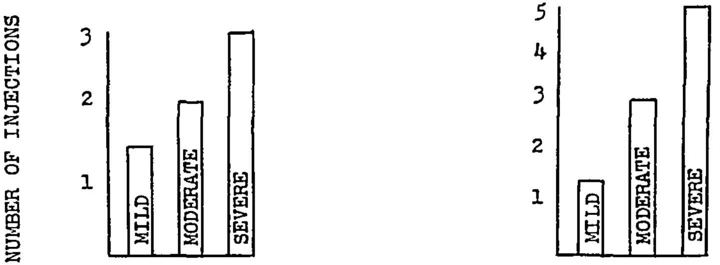
Stellate ganglion blocks serve to interrupt this severe cycle of vasospasm, exudation and pain by producing intense localized vasodilation and subsequent absorption of the painful exudate. As the effect of the block gradually diminishes, the vasoconstriction partially recurs, absorption is interrupted, and probably more exudation follows, resulting in further pain and discomfort. With each subsequent block there is progressively less tendency to return of the vasoconstriction and vasodilatory effect is the more sustained. A constant confirmatory observation was that the patient with the warmest reactions in the shoulder had the maximum relief of symptoms.

The beneficial results observed with other forms of therapy, such as roentgen rays, diathermy, infra-red rays, procaine injection and needling, are undoubtedly due to the production of local hyperemia and consequent similar absorption of exudate and edema. However, block of the stellate ganglion produces much more prompt and more intensive hyperemia than does any one of these agents; this may well explain the more dramatic and sustained relief obtained, with resultant return to normal function within an average period of less than five days, as contrasted to periods of two to six weeks with other forms of therapy.

The technic employed in most of this series was the anterolateral approach of Murphey, which yielded successful blocks in every case with a minimum of difficulty and risk. The true anterior technic of De Sousa Pereira was successfully used but proved less satisfactory in our hands than the anterolateral approach. The older supraclavicular methods are much more dangerous and should not be employed. The posterior technic, somewhat similar to that employed for the lumbar parasympathetic block, is also effective and fairly safe. The results are identical once a successful block has been established, so that the actual technic employed is a matter of personal preference and familiarity. However, maximum vasomotor effects are



AGE AND SEX DISTRIBUTION



AVERAGE NUMBER OF STELLATE BLOCKS REQUIRED

PERIOD OF DISABILITY

Fig. 4.—Analysis of 36 cases of stellate ganglion black. The period of disability (until complete restoration of normal function) varied with the patients' occupations, employer or employee capacity; partial duties performed earlier. Age is recorded in years and disability period in days.

Duration of Symptoms			Degree of Involvement*			Calcerous Deposits*		
Max.	Min.	Av.	Mild	Mod.	Severe	Yes	No	?
21 da	8 hr.	5 da.	22	15	19	29	5	2

*Classified by degrees of pain, tenderness, local heat, swelling, limitation of motion. In 3 cases of severe involvement it was necessary to perform four blocks each.

*Detected by roentgen examination. In 2 cases (listed in final column above) no roentgenograms were available.

produced if the middle and intermediate cervical ganglia are included in the stellate ganglion block.

There were no serious complications in this series. The only untoward effects noted were a procaine reaction, transitory cervical and scapular pain from piercing of the prevertebral fascia, and occasional numbness of the arm from partial block of the brachial plexus. Pneumothorax, hydrothorax, air embolism, fatal subarachnoid injection, phrenic nerve paralysis with limited diaphragmatic motion, and cardiorespiratory paralysis from a vagal inhibitory reflex may occur unless proper precautions are constantly exercised. These include careful direction of the needle and deep inspiration to observe for sucking effect, and a 1-cc. trial injection, with a waiting period of thirty seconds prior to the complete injection. The injection should never be lightly regarded or performed in the clinic or office unless proper resuscitation equipment is available.

The results of stellate ganglion block are most striking in cases of acute severe involvement of recent onset; immediate, dramatic relief of pain is obtained, and there is an increase in active and passive shoulder motion. Although a mild relapse may occur when the effect of the block has disappeared, further improvement is secured by additional blocks at intervals of one or two days until normal function is completely restored. In the two "mild" cases, one or two blocks were required to restore completely normal function within seventy-two hours; in 15 cases in the "moderate" group an average of two blocks produced excellent results in 40 per cent within 2 hours and in 86.6 per cent within one week, and in 19 cases in the "severe" group an average of three blocks restored normal function in 89.4 per cent within one week. In the latter group 6 patients, or 31.5 per cent, had a normally functioning arm seventy-two hours after beginning therapy for a severely disabling and painful shoulder.

Thus, there were excellent results in 32 cases, or 88.9 per cent; in 4 cases, or 11.1 per cent of those in which the patients were not completely well within one week, a few physical therapy treatments given after return to work cleared the residual symptoms. The average periods of disability were one and one-half days in the "mild" cases; three and two-tenths days in the "moderate" group, and five and five-hundreths days in the "severe."

Calcareous deposits were detectable by roentgen examination in 29 of 34 cases studied. After an interval of six to eighteen months there was marked or complete absorption of calcium in 16, or 88.8 per cent, of 18 in which the patients were available for follow-up roentgen studies.

A total of 25 patients were followed for one to four years; there were only 2 mild recurrences, seven and twelve months later, but both promptly cleared with one physical therapy treatment.

The use of an oral vasodilator drug was tried in 2 cases, but the results were not encouraging. Perhaps intra-arterial injection would be more effective, but stellate block is a simpler procedure. A supraclavicular sensory nerve block to interrupt the afferent half of the reflex arc is reported to be of value, but it has not been attempted here.

As experience was gained it was observed that occasionally a fourth block would promptly clear up any mild residual symptoms, so that it was unnecessary to resort to one or two weeks of physical therapy. After the first block, with subsequent relief of pain, patients are generally less apprehensive and more receptive to further injections. The mild preoperative sedative given prior to the first block was usually not necessary for subsequent injections.

SUMMARY AND CONCLUSIONS

1. Stellate ganglion block is offered as a quick means of restoring normal function to the painful shoulder when the pain occurs as a result of acute subdeltoid bursitis or calcareous peritendinitis.

2. Discomfort, pain, disability and economic loss are materially diminished by this method of treatment as contrasted with other available forms of therapy.

3. The operative risk and the danger of serious complications are small if proper technic and safety precautions are observed. The anterolateral approach of Murphey gave consistently good results and is recommended for maximum vasomotor effect in the upper extremity.

4. Injections should be performed only after adequate instruction and supervision.

RÉSUMÉ ET CONCLUSIONS

1. On pratique le bloquage du ganglion stellaire en vue de redinner à une douloureuse sa fonction normale lorsque la douleur est conséquence d'une bursite aigue de la bourse sous-deltoïdienne ou d'une péritendinite calcifiée.

2. En comparaison avec les autres formes de thérapie cette méthode est une mesure plus économique, moins douloureuse et qui laisse moins de gêne dans le mouvement.

3. Le risque opératoire et le danger de complications sérieuses sont très petits pourvu que l'on prenne toutes lesprécautions et une bonne technique. La voie d'abord antéro-latérale de Murphey donne constamment de bons résultats et est recommandée pour donner le maximum d'effet vasomoteurs au membre supérieur.

4. On ne devrait pas faire d'injection sans une stricte surveillance et une connaissance adéquate.

RESUMEN Y CONCLUSIONES

1. Se propone el bloqueo del ganglio estelar para restaurar rápidamente la función normal en el hombro doloroso, cuando el dolor ocurre como resultado de bursitis subdeltoidea o peritendinitis calcárea.

2. Desconsuelo, dolor, incapacidad y pérdida económica disminuyen materialmente por este método de tratamiento en contraste con otras formas de conducta terapéutica.

3. El riesgo operatorio y el peligro de complicaciones serias son pequeños si se obseran la técnica apropiada y precauciones de seguridad. La vía anterolateral de Murphey da resultados consistentemente buenos y se recomienda para efecto vasomotor máximo en la extremidad superior.

4. Las inyecciones deben hacerse sólo después de instrucción y supervisión adecuadas.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

1. Die Blockierung des Ganglion stellatum wird als Mittel zur raschen Wiederherstellung der normalen Funktion der schmerzhaften Schulter vorgeschlagen in Faellen, wo der Schmerz durch eine akute subdeltoide Schleimbeutelentzuendung oder durch eine verkalkende Peritendinitis hervorgerufen wird.

2. Im Gegensatz zu andereñ verfuegbaren Behandlungsarten werden durch diese Methode der Schmerz, die Bewegungsbehinderung und die oekonomischen Opfer der Kranken erheblich gemindert.

3. Das Risiko der Operation und die Gefahren ernster Komplikationen sind gering, wenn eine saubere Technik und sorgfaeltige Vorsichtsmassnahmen zur Anwendung kommen. Der anterolaterale Zugangsweg nach Murphey ergab staendig gute Resultate und wird zur Erreichung bester vasomotorischer Wirkungen auf die obere Extremitaet empfohlen.

4. Die Einspritzungen sollten nur nach ausreichendem Training und unter strenger Aufsicht ausgefuehrt werden.

RIASSUNTO E CONCLUSIONI

1. *Il blocco del ganglio stallato* e' presentato come un rapido mezzo per ripristinare la normale funzionalita' in una soalla dolente per borsite acuta sottodeltoidea a peritendinite calcificante.

2. Disconforto, dolore, inabilita' e danno economico sono materialmente diminuiti con detto trattamento, il che non si verifica cona altra forma di terapia.

3. Rischio operatorio ed altre complicazioni sono esigue se la tecnica e' appro-

priata e le precauzioni osservate.

4. La via di accesso antero-laterale di Murphey e' la raccomandata per ottenere i massimi effetti vasomotori all'estremita' superiore.

5. Le infiltrazioni dovrebbero essere praticate soltanto dopo adeguato tirocinio e supervisione.

SUMÁRIO E CONCLUSÒES

1. O bloqueio do ganglio estrelado é apresentado como um meio de restaurar rapidamente as funções normais de um ombro dolorôso quando a dôr ocórre como resultado de uma bursite sub-deltoidiana ou de uma peritendinite calcarea.

2. Desconfôrto, dôr, inhabilidade e pêrda economica são materialmente diminuidos por este método de tratamento em contraste com outras formas de terapeutica disponivel.

3. O risco operatório e o perigo de sérias complicações são pequenos, si uma técnica apropriada e precauções de segurança são observadas. A abordagem antero-lateral de Murphey tem dado consistentemente bons resultados e é recomendada, visando o efeito vasomotôr maximo na extremidade superior.

4. As injeções devem ser executadas somente depois de adequada instrução e supervisão.

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Surgical Treatment of Abdominal Ascites Due to Cirrhosis of the Liver

Preliminary Experience with New Cannula Button in Peritoneosaphenous Anastomosis

CHARLES F. SCHNEE, M.D., C.M., A.I.C S.
PATCHOGUE, NEW YORK

IN such a disease complex as abdominal ascites due to cirrhosis it is doubtful that there can ever be a well defined criterion for operability, leading to assurance of a reasonably good prognosis. As a consequence, many operations have been performed for conditions of long standing, when the pathologic process is irreversible and when other complicating factors mark the case as a grave operative risk. The results, as might have been expected, were discouraging. Surgical intervention for the relief of abdominal ascites and as a method of treatment for cirrhosis of the liver is condemned by internists and given only passing consideration by surgeons who value their reputation. However, examination of the case histories upon which this paper is based reveals that only those patients who had hopelessly failed to respond to medical therapy were considered by the medical service, which received all such admissions, to be suitable candidates for operation. This, in my opinion, partially explains the results obtained by surgical intervention. The first patient upon whom we performed a peritoneosaphenous anastomosis using a vitallium anastomotic cannula button was relieved of his ascites. He died, however, and autopsy revealed cirrhosis of the liver, bilateral polycystic kidneys, extensive infarction of the spleen, thrombosis of the splenic vein and inferior vena cava with recanalization of the caval thrombus, chronic duodenal ulcer, chronic cholecystitis and acute extensive pulmonary edema. This patient was transferred to the surgical department from a group of patients under the care of Dr. Arthur J. Patek Jr. at Goldwater Memorial Hospital. The medical record had previously shown a nonprotein nitrogen level of 150 mg. per hundred cubic centimeters and a urea nitrogen level of 45 mg., and the patient had completely failed to respond to the dietary regime for cirrhosis of the liver. The patient survived the implantation of the cannula button by two months and five days. Considering observations at autopsy, the fact that this patient survived operation has always been a matter of amazement to me. Although his case was extraordinarily atypical, it should serve as a warning to any surgeon when a patient with abdominal ascites eventually reaches him. It is the type of case that should be unequivocally rejected for surgical intervention. Nevertheless, it did demonstrate that ascites may be relieved by surgical means.

There is clinical and laboratory evidence that the return of the ascitic fluid to the general circulation is of benefit in restoring liver function. However, in those cases in which the condition has advanced to a stage of extensive fibrotic replacement of the liver, the return of the ascitic fluid is no longer of value; surgical intervention only adds to the patient's discomfort and may give rise to troublesome complications.

The surgeon who attempts to relieve ascites and indirectly to treat cirrhosis

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should have a comprehensive knowledge of the disease and the surgical procedures devised in the past for this purpose.

The time-honored procedure for relief of abdominal ascites is paracentesis. It was noted prior to 1896 that after repeated paracenteses recovery occasionally took place. Recovery was attributed to adhesions forming between the abdominal wall and the intra-abdominal viscera. Through these adhesions, it was reasoned, increased circulation was effected and the ascites subsided. It was on the basis of this reasoning that operations for the relief of abdominal ascites were first devised.

In 1896, Drummond suggested omentopexy. Later, in 1898, Morison and Talma devised and advocated a procedure known as the Morison-Talma operation for ascites. This consisted of an omentopexy or epiplopexy. It simply consisted of laying the abdomen open and suturing the omentum to the parietal peritoneum. The operation today has fallen into ill repute, although, in reviewing statistical material gathered in the early days of this procedure, one is surprised by the results reported. In the *American Journal of Surgery* for June 1909, the statistics on omentopexy and its modifications in a series of 1,565 cases were reported. The article claimed that 30.4 per cent of the patients were cured, 19.8 per cent relieved, and 39.2 per cent not relieved; 10.6 per cent died. Maiochi, during this same period, reported the cases of 17 patients operated on without a death. Some of the cases were observed for five years, and 4 patients seemed to be cured of their symptoms. These early statistics speak much more favorably for surgical treatment than do those of the present time. It should be recalled that in the late nineteenth century and the beginning of this century the present enthusiasm about cirrhosis from a medical point of view had not yet developed, and a great many of the cases reported by surgeons during this period were undoubtedly encountered at an early stage. The statistics, therefore, may reflect this factor.

Another method was that of Schiassi. This consisted of making a flap in the upper left abdominal quadrant down to the peritoneum and a vertical incision through the peritoneum, withdrawing the spleen and omentum into the wound and fixing these in a subcutaneous position.

A third method, devised by the Mayos, consists of forming pockets beneath the posterior sheath of the rectus muscle. Incisions are made over the upper part of the rectus through the peritoneum. The second incision is made below this, and a pocket is formed by tunnelling upward. The omentum is drawn down into this pocket and sutured in place. This may be done on both sides of the abdomen.

Narath in 1905 modified several of the aforementioned procedures. His incision was made to the left of the round ligament; the omentum was brought through an opening in the peritoneum into a subcutaneous pocket, and the peritoneum only closed loosely around the pedicle of the omentum.

Corson (*Annals of Surgery,* 1907) wrote an enthusiastic article advocating Narath's method. Binni also praised this modification of omentopexy, on the basis that it not only established permanent and efficient drainage of the ascitic fluid into subcutaneous tissue by means of a herniated omentum, but also established collateral circulation. Up to this time surgeons had attributed the relief of ascites in cases of cirrhosis of the liver to the establishment of a collateral circulation from the portal system to the general systemic circulation. If this were so, it was reasoned, why would it not be advisable to establish a direct circulatory anastomosis between the mesenteric system of veins and the inferior vena cava? The experiments of Eck had demonstrated that anastomosis in animals could be successfully performed between the portal vein and the inferior vena cava; therefore it was suggested that the same be done in man. Vidal was the first to carry out the Eck principle. Guibe, commenting upon the procedure, stated, "The operation ought to be abandoned because however efficient it may be, it exposes the patient to great danger—the danger of alimentary intoxication, which might possibly be foreseen and avoided, but especially the danger of a general infection of intestinal origin, since the intestinal mucosa does not always pose a sufficient barrier to microbic invasion." Vidal's patient died after four months, with evident signs of a sudden general infection. Thierry de Martel carried out a like procedure, and his patient died of anuria within forty-eight hours. The Eck fistula idea has been revived and improved by Blakemore and Lord. Success by this means is difficult to evaluate; however, I have examined several patients so treated who were doing well after several years.

Lambotte and Handley devised drainage of the ascitic fluid by inserting thick silk suture material leading from the peritoneal cavity through the subcutaneous tissues. Henschen in 1913 conceived the idea of bringing the fluid into a subcutaneous area by means of an open finger cot sutured in place and leading into the subcutaneous tissues.

Paterson, in the *Lancet* of Oct. 29, 1910, first introduced the use of the glass button. This button was a spool-like affair much the same as the Cooney button, except that it lacked the guard at one end which protected the opening from being closed by herniation of omentum or bowel. It led from the peritoneal cavity to the subcutaneous fat layer; however, no mention was made by Paterson of the formation of a subcutaneous pocket. The button evidently fell into disuse for two reasons: Its inner opening was blocked either by omentum or by intestine, and its outer opening was directly against the subcutaneous tissues with no preformed pocket formation so that fluid resorption might take place.

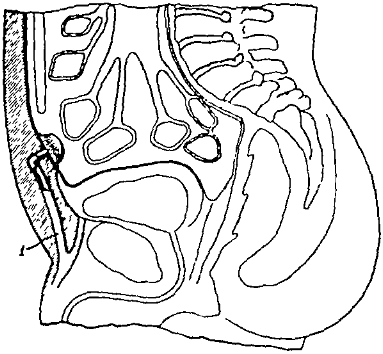

Fig. 1.—Sectional view with cannula button in position in peritoneal cavity. Cannula stem of button enters reflected and transplanted great saphenous vein (*1*). Ascitic fluid is thus returned to general circulation via femoral vein.

A new approach to the surgical treatment of ascites was devised by Routte and described in *Lyon Chirurgica*, March 1910, and *La Presse Medicale*, June 1910. This consisted of a peritoneal saphenous anastomosis. The operation was first carried out in June 1907. Routte's method consisted of dissecting the great saphenous vein at the upper part of the thigh for a distance of approximately 7 to 9 inches (17.7 to 22.8 cm.). The vein was severed in the midthigh area and the distal end tied. The proximal portion of the vein was reflected and brought up through the subcutaneous tissues of the abdomen into the right lower quadrant or inguinal area. In this position anastomosis was carried out between the vein end and the peritoneum. The opening soon peritonealized and drainage through the saphenous vein into the common femoral stopped. Despite these physiologic handicaps, successful results in several cases were reported by different surgeons. The operation, however, was soon abandoned. This method of directly draining the ascitic fluid into the venous circulation was also attempted by Castle and Bryant of San Francisco in 1911. One of their patients died after the operation, and the other was followed up for several weeks only.

Saphenoperitoneal anastomosis was again reported by Bernheim of Johns Hopkins in the *American Journal of Medical Sciences* during 1915. Bernheim modified the Routte technic by anastomosing the side of the vein through an opening approximately 1 inch (2.5 cm.) long. His patient did well for approximately eight days, after which time he suddenly felt a pain in his left shoulder and died within twenty-four hours. Autopsy was not permitted, and the true cause of death was never determined. Bernheim concluded his article with the following statement: "It seems fair to conclude that the operation is worthy of further trial in suitable cases, since technically it is not difficult to carry out, and theoretically it has much to commend it." Others have reported using the Routte method of peritoneal saphenous anastomosis with varying success. The principal cause of doubt in evaluating the procedure lies in the follow-up. Some of the patients were followed for only short periods, and others were completely lost sight of.

This brief historical review of the surgical treatment of ascites brings us up to the present period. In 1937, Muriel K. Fuller first prescribed extensive resection of the small intestine in the treatment of ascites. The biophysiologic basis for this procedure is explained by four salient points:

1. The ascites is due to obstruction of the portal circulation. Removal of a part of the portal network by ample resection tends to decrease the venous return to the extent that what does come into the portal vein is capable of passing through the cirrhotic liver. Blood pressure is reduced in the portal vein and its capillaries, and the transudation of fluid into the peritoned cavity is halted or decreased.

2. The shortened intestine is carrying the same amount of fluid and food as before, and under such circumstances it is possible that the osmotic pressure of the intestinal contents will be increased, thus bringing fluid into the lumen and increasing the fluid content of the feces. This, it is held, explains the diarrhea following extensive resection.

3. The blood stasis of the portal system causes some anoxemia, which increases the osmotic permeability of vessel walls to fluid. With relief of this anoxemia due to improved portal circulation, the osmotic permeability is returned to a more nearly normal status.

4. The removal of several feet of small intestine changes the relation between the visceral peritoneum and the parietal peritoneum. Assuming that the fluid passes from the visceral peritoneum and is absorbed by the parietal peritoneum, resection of the intestine increases the ratio of the absorptive surface to the secretory surface.

Huergo, Castellanos and Nunez reported a case of ascites treated by resection in September 1942. They concluded by stating that the operative wound healed by first intention and that the patient was ambulatory in twelve days. His weight later increased to 140 pounds (63.5 Kg.), and there was no recurrence of ascites. The authors expressed the opinion that enterectomy is effective in the cure of ascites. (I may also state that, in personal communication with Dr. Donald Cook of Chicago, I was advised that he also had witnessed a case of ascites cured by enterectomy.)

During the last seven years, Blakemore and Lord have reported in a number of articles their method of treating ascites by anastomosing the portal vein into the inferior vena cava, using the Blakemore vitallium tube and cuff method. They have also attempted to reroute part of the portal circulation by removing one kidney and the spleen and anastomosing the splenic vein to the renal vein. The primary objection to these procedures is the extensive character of the operation to be carried out on patients who are, in many cases, unfavorable risks. Second, it has frequently been observed that the vessels to be anastomosed have undergone sclerotic change, which makes the anastomosis extremely difficult.

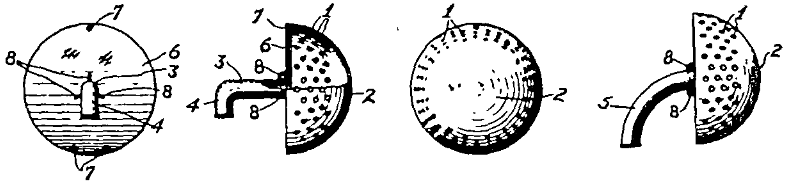

Fig. 2.—Different views of dome-shaped cannula anastomotic button with perforations (*1*) for fluid drainage and nonperforated area (*2*) to hold back viscera. Cannula part (*3*, *4*, *5*) may be of different shapes, right-angled or curved. The former is preferable. Note flat posterior surface (*6*), small perforations (*7*) for anchoring button to peritoneum and fascia to prevent rotation, and eyelets (*8*) for sutures to hold vein on cannula.

Other methods of treatment have since been reported by Parker and Breckler and by Lord, but they are modifications of methods previously devised.

The most discussed of the recently reported methods of treatment of ascites is that presented by Crosby and Cooney in the *New England Journal of Medicine* in 1946. They revised the old Paterson method of subcutaneous drainage of the fluid by use of a glass spool button. Their bibliography, however, failed to list Paterson's contribution published in the *Lancet* on October 29, 1910. The Paterson procedure was supplemented by the formation of a large subcutaneous pocket for the resorption of the fluid, and the inner side of the button was revised with the addition of an extending glass protective plate to prevent plugging of the button by omentum and intestine. I have used similar buttons except that they have been made of boilable lucite instead of glass. The advantages of this boilable lucite button lie in the fact that it is more easily handled and fear of breakage is eliminated.

Cooney in a personal communication to me stated that he and his associates had had 20 cases in which favorable results were obtained. Some of the patients in these cases, he stated, are entirely free of ascites, and others require less frequent taps than before the insertion of the button.

I have inserted "Paterson-Cooney" buttons in 6 patients. Five were failures. Four of these were used in cases of longstanding ascites with irreversible cirrhosis. The fifth patient did well for a time, but the pocket gradually became fibrotic and contracted to negligible size. In the sixth case the result was highly satisfactory. The necessity for periodic taps decreased and eventually paracentesis was no longer necessary. The albumin-globulin ratio, reversed before operation, returned to normal, and the general well-being of the patient was greatly improved. He was followed for three years, after which time he was still doing well. This result, together with favorable reports from others (Lord; Lane; Cooney) demonstrates that surgical intervention can be of assistance provided the surgeon receives the patient before the liver has reached the irreversible stage. The return of the protein in the ascitic fluid by one means or another, to the general circulation is beyond a doubt beneficial to a patient with ascites due to cirrhosis, and the practicability of returning the fluid by vein has been demonstrated by Carter and recently by Olvera.

Careful study of my cases and those of others demonstrates that when the albumin-globulin ratio returns to normal the patients do well. When this is impossible, as in the presence of far advanced pathologic change, failure may be anticipated. If the patient continues to do well it may be reasoned that it is due to orab changes in the hepatic dise some instances accumulation of fluid stops. When pockets of fluid remain evident and tapping is unnecessary, as in one of my cases, improvement must have taken place in the liver, since hyalinization of the pockets must have occurred and fluid resorption reduced to a negligible amount. This further emphasizes the necessity of seeing patients before irreversible pathologic change has affected the liver. It further dictates better cooperation between medical and surgical services.

In the spring of 1944, aided by Dr. Frederic W. Bancroft, I undertook to study the Routte procedure of peritoneosaphenous anastomosis for the relief of abdominal ascites. In the presence of clear ascitic fluid it was known to be clinically safe and biophysiologically desirable to return the fluid to the general circulation. Considering the end results of transplanting the sectioned great saphenous vein and anastomosing it into the peritoneal cavity, it was reasoned that there were three possible causes for failure of the anastomosis to maintain itself: first, closure of the anastomosis by the peritoneum; second, the fact that an unfavorable disposition of the intestinal tract and the omentum against such an ostium is always a possibility, and third, the fact that occlusion of the vein by surrounding fibrotic tissue, especially where it passes through the fascial sheaths, is an ever-present threat to the success of the procedure.

To overcome these objections, I devised what I have called an anastomotic cannula button, manufactured of vitallium. The button was placed at the junction of the saphenous vein with the peritoneum. The inner or bulbous portion was so devised as to protect the ostium of the cannula from being occluded by omentum, and the cannula portion was attached with the idea of preventing occlusion of the vein by fibrotic formation about the vein as it passed through the fascial layers of the abdominal wall.

The operation should be carried out in two stages: first, transposition of the saphenous vein into the new subcutaneous bed, followed in ten days by implantation of the anastomotic cannula button. Another method that suggests itself is to return to the original Routte procedure, but use a Blakemore tube and effect the anastomosis between the vessel and peritoneum by the cuff ligature method described by Blakemore for the anastomosis of blood vessels. Such a procedure, in the absence of seepage of ascitic fluid about the vein transposition, might well be carried out in one stage.

I have met with varying degrees of success with the use of the cannula button and have experienced a number of failures, but no postoperative fatalities due to the drainage of ascitic fluid into the general circulation.

Certain conclusions, therefore, have been reached. The study and work suggest several questions which are unanswered in the literature and which may have an intimate bearing on the overall problem of cirrhosis of the liver.

SUMMARY AND CONCLUSIONS

1. The author points out that patients with abdominal ascites requiring surgical treatment should undergo reasonable clinical and laboratory tests before being accepted. In some cases, during the past decade, the condition has proved irreversible and operation has been performed as a last desperate resort, a situation in which failure is to be expected.

2. A brief review of surgical procedures related to the subject is presented.

3. The question is asked, "Is there an anatomic arterial factor in cases of cirrhosis which favors partial anoxia in the presence of certain gastrointestinal disturbances?" This is suggested by the fact that cirrhosis may develop in association with chronic congestive heart failure. Such a variation in the arterial pattern might well explain why cirrhosis is sometimes observed in the teetotaler while the worst inebriate may have a perfectly normal liver.

4. It is suggested that further study on the problem of the formation of ascitic fluid is necessary. Is it purely due to a

pathologic condition of the liver? Are the gastrointestinal tract and the peritoneum in some way involved?

5. Closer cooperation between the internist and the surgeon is emphasized as essential.

6. A revised method of performing the peritoneosaphenous anastomotic procedure of Routte is presented, with use of a new anastomotic cannula button, and an alternate operation is suggested and outlined in which the Blakemore blood vessel tube and cuff anastomosis are used.

RÉSUMÉ

1. Les patients faisant de l'ascite, chez qui un traitement chirurgical électif est indiqué, devraient toujours être soumis à des épreuves suffisantes de laboratoire et cliniques avant d'être choisis. Souvent, ces dernières années, l'opération était une tentative désespérée chez un malade dont la conditon était devenue irréversible. On explique facilement les pauvres résultats obtenus dans la majorité des cas.

2. On revoit brièvement les techniques chirurgicales en rapport avec le sujet.

3. Dans les cirrhoses, y a-t-il anatomiquement un facteur artériel hépatique qui favoriserait une anoxie partielle en présence de certains troubles gastro-intestinaux? On est amené à penser cela du fait qu'une cirrhose peut se développer en association avec une défaillance cardiaque chronique et congestive. Une telle variation dans la disposition artérielle pourrait bien expliquer pourquoi on rencontre parfois une cirrhose chez un abstinent et un foie parfaitement normal chez le pire ivrogne.

4. Une investigation plus poussée sur le problème de la formation de l'ascite est absolument nécessaire. Est-ce seulement du domaine de la pathologie hépatique? Le tractus gastro-intestinal et le péritoine sontils intéressés?

5. Il doit y avoir une coopération plus étroite entre le chirurgien et le médecin "interniste."

6. On présente une méthode revisée de pratiquer l'anastomose péritoinesaphène de Routte se servant d'une nouvelle "canule-bouton" pour anastomose. On suggère de décrit une opération où le tube pour vaisseaux sanguins et manchon pour anastomose de Blakemore sont employés.

ZUSAMMENFASSUNG

1. Kranke mit Bauchwassersucht, die einen elektiven chirurgischen Eingriff brauchen, sollen, ehe sie zur Operation zugelassen werden, einer ausreichenden klinischen und laboratoriumsmaessigen Untersuchung unterzogen werden. Waehrend der vergangenen Jahrzehnte hat sich die Erkrankung in manchen Faellen als irreparabel herausgestellt, und die Operation wurde nur als letzter Akt der Verzweiflung ausgefuehrt. Die unter solchem Umstaenden eintretenden unguenstigen Resultate in der Mehrzahl der chirurgischen Eingriffe beduerfen keiner weiteren Erklaerung.

2. Es wird ein kurzer Ueberblick ueber die bei der Erkrankung angewandten chirurgischen Verfahren gegeben.

3. Gibt es einen anatomischen Faktor in der arteriellen Versorgung der Leber, der in Faellen von Leberzirrhose beim Bestehen gewisser Magendarmstoerungen einer partiellen Sauerstoffarmut Vorschub leistet? Eine solche Moeglichkeit wird durch die Tatsache angedeutet, dass eine Zirrhose sich in Verbindung mit chronischer Herzschwaeche und Stauung entwickeln kann. Eine derartige Veraenderung der arteriellen Verteilung koennte sehr wohl eine Erklaerung dafuer abgeben, dass die Zirrhose manchmal bei Abstinenzlern beobachtet wird und andererseits eine durchaus normale Leber bei schweren Trinkern vorkommt.

4. Weitere Untersuchungen des Problems der Entstehung der Aszitesfluessigkeit sind notwendig. Entsteht die Bauchwassersucht einfach auf Grund krankhafter Veraenderungen der Leber? Spielen der Magendarmkanal und das Bauchfell irgend eine Rolle?

5. Engere Zusammenarbeit zwischen

Internisten und Chirurgen ist anzustreben.

6. Der Verfasser beschreibt eine Modifikation der Routteschen Methode der Anastomose zwischen Bauchfell und Saphena, wobei ein neuer Knopf der Anastomosenkanuele zur Anwendung gelangt. Ausserdem schlaegt er eine zweite Operation zur Auswahl vor und beschreibt ihre Technik. Hier gelangen das Blakemoresche Blutgefaessrohr und eine Manschettenanastomose zur Anwendung.

RESUMEN

1. Pacientes con ascitis que requieren tratamiento quirúrgico electio deben someterse a preubas clínicas y de laboratorio adecuadas antes de ser aceptados. En algunos casos, durante la pasada década, el estado patológico ha sido irreversible y la operación ha tenido lugar como un recurso desesperado final. En tales circunstancias se explican ampliamente los resultados desfavorables en la mayoría de los fracasos quirúrgicos.

2. Se revisan someramente los procedimientos operatorios sobre el particular.

3. ¿Existe un factor arterial hepático anatómico en casos de cirrosis que favorezca anoxia parcial en presencia de ciertos trastornos gastrointestinales? Esto lo sugiere el hecho de que la cirrosis puede desarrollarse asociada con desfallecimiento cardíaco congestivo crónico. Dicha variación en el tipo arterial puede explicar bien porqué la cirrosis ocurre alguna vez en el abstemio y existe un hígado perfectamente normal en el borracho inveterado.

4. Se necesita un estudio más amplio sobre el problema de la formación del líquido ascítico. ¿Se trata puramente de un estado patológico hepático? ¿Se encuentran complicados en alguna forma el tubo gastrointestinal y el peritoneo?

5. Debe tener lugar la más estrecha cooperación entre el internista y el cirujano.

6. Se presenta un método revisado para efectuar la anastomosis peritoneosafena de Routee, con el uso de unnuevo botón cánula anastomótico, sugiriéndose una operación alternada y señalándose como usar el tubo vascular sanguíneo de Blakemore y la anastomosis en puño.

RIASSUNTO

1. I pazienti con ascite che richiedono trattamento chirurgico dovrebbero essere sottoposti ad un adeguato studio clinico e di laboratorio prima di essere avviati all'intervento. In alcuni casi durante la passara decade, la *infermita'* veniva considerata irreversibile e l'operazione veniva esequita come ultima risorsa. In queste circostanze la poverta' dei ristulati é spiegabile.

2. E' presentata una breve rivista dei procedimenti chirurgici in uso.

3. Esiste un fattore anatomico dell'arteria epatica in casi di cirrosi, fattore che favorisce un'anoxia parziale in presenza di certi disturbi gastrointestinali? Questa ipotesi é suggerita dal fatto che la cirrosi puo' svilupparsi in associazione con scompenso cardiaco cronico congestizio. Una tale anomalia nello sviluppo arterioso potrebbe ben spiegare perché la cirrosi é talvolta incontrata nell'astemio e invece un fegato perfetto é incontrato nel peggiore bevitore.

4. Ulteriore studio é necessario nella comprensione del problema dell'ascite. E' essa esclusivamente dovuta ad una condizione patologica del fegato? Sono implicati in qualche modo il tubo gastroenterico ed il peritoneo?

5. Una piu' vicona collaborazione fra internista e chirurgo é desiderabile.

6. Una modificazione del metodo di Routte dell'anastomosi peritone-safena é presentato, é suggerito l'uso di un nuovo bottone cannula ed é suggerita ed esposta un'operazione in cui un tipo di vaso sanguigno é usato per l'anastomosi. secondo Blakemore.

SUMÁRIO

1. Os pacientes de ascite abdominal escolhidos para tratamento cirurgico eletivo deveriam ser submetidos a exames

clinico e de laboratório razoaveis antes de serem aceitos. Em alguns casos durante a decada passada, o estado tem sido irreversivel e a operação tem sido executada como um ultimo esfôrço desesperado. Sob tais circunstancias os resultados desfavoraveis na maioria dos fracassos cirurgicos são amplamente explicados.

2. Uma bréve revista dos processos cirurgicos relacionados com o assunto é apresentada.

3. Haverá um fatôr hepatico arterial em casos de cirróse que favorêça a anóxia parcial em presença de certas perturbações gastro-intestinais? Isso é sugerido pelo fato de que a cirróse póde evoluir em associação com insuficiencia cronica congestiva do coração. Tal variação no tecido arterial poderia explicar porque a cirróse é algumas vezes vista no abstinente e um figado perfeitamente normal é encontrado no alcoolatra.

4. Ulterior estudo do problema da formação do liquido ascitico é necessário. E' ele puramente devido á condição patológica do figado? Estarão o tubo gastro-intestinal e o peritoneo de algum módo envolvidos?

5. Mais intima cooperação entre o clinico e o cirurgião deve ser empreendida.

6. E' apresentado um método da anastomóse peritonio-safenósa de Routte, revisto e com o uso de uma nóva canula anastómotica; uma operação alternada é sugerida e configurada, na qual o tubo de Blakemore para vasos sanguineos e a anastomóse em abotoadura são usados.

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Simplified Photography for the Surgeon

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THIS paper describes an apparatus to simplify clinical photography for the surgeon, and outlines its use.

Clinical photography is being used more and more as an adjunct to the practice of surgery.[1] Its greatest value is in teaching, particularly in the training of residents. The camera follows the patient's progress with a critical eye. Photographic museums present pathology in a colorful and tasteful manner.[2] Surgical papers are weak without illustrations.[3]

The surgeon finds use for photography at the operating table, where pathologic tissues and organs can be depicted with their original color and luster—for example, the typical appearance of a perforated ulcer when the abdomen is open, the extreme edema of pancreatitis, or the brilliant colors of intestinal obstruction (Plates *A* and *B**).[4]

Surgical specimens photographed immediately in the operating room are preserved permanently in their original brilliance on film (Plate C*). The benefits of reconstructive surgery are graphically demonstrated by serial photographs in color (Plate D*).

Many busy surgeons do not wish to concern themselves with the time-consuming details of ordinary photography. Variable results due to differences in lighting, exposure time, and distances cause disappointment. The taking of measurements and the use of a light meter are onerous. The apparatus to be described attempts to answer these problems, reduces the time consumed to seconds, and eliminates the amateur photographer as a source of error.

The expense of the entire apparatus is extremely low, within the reach of the surgical resident who often sees pathologic material worth preserving for future reference or teaching.

Color transparencies, which are processed by the manufacturer and returned ready for use, have the widest applicability..

Description of Equipment.—The apparatus uses an ordinary 35 mm. roll film camera of popular make.* The camera is attached by its own threaded socket to fixed focus frames composed of $\frac{1}{8}$ by $\frac{3}{4}$ inch steel bars with a wire reticule (Fig. 1). The reticule is $\frac{1}{2}$ inch wider than the picture size at this distance, so that the wire is never in the finished photograph. The length of the bar is determined by the focal distance of the lens combination used.

A second bar mounting lights, a switch and a 15-foot roll of cord is belted to the first (Figs. 2 and 3). This combination has the following advantages:

1. Light, source and distance are constant.
2. The frame is always in focus.
3. The apparatus is adaptable to lesions or specimens of various sizes.
4. The camera settings are constant once the apparatus is standardized.
5. The apparatus can be kept set up and put in use very quickly.
6. At the set of speeds used, the apparatus can be hand held without fear that motion will ruin the picture.

This is not a new idea, but neither is the reticule or the frame a new idea. They are merely adaptations of ideas previously presented.[5]

In the operating room, where the shockproof switch is essential, it is possible to turn the light switch on the bar to the

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*Color plate at end of article.

From the Caylor-Nickel Clinic, Bluffton, Indiana.
Submitted for publication April 7, 1951.

* Kodak 35.

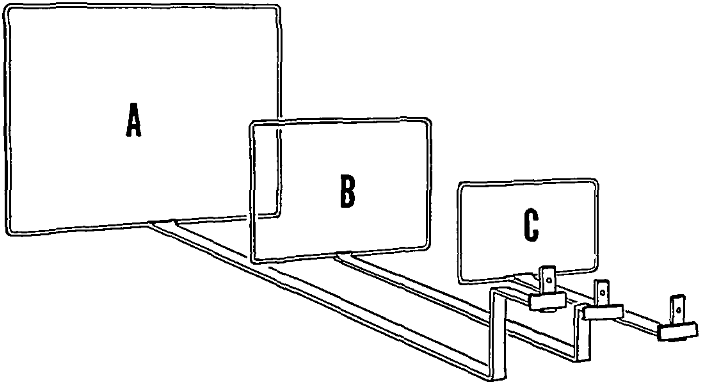

Fig. 1.—Line drawing of close-up frames.

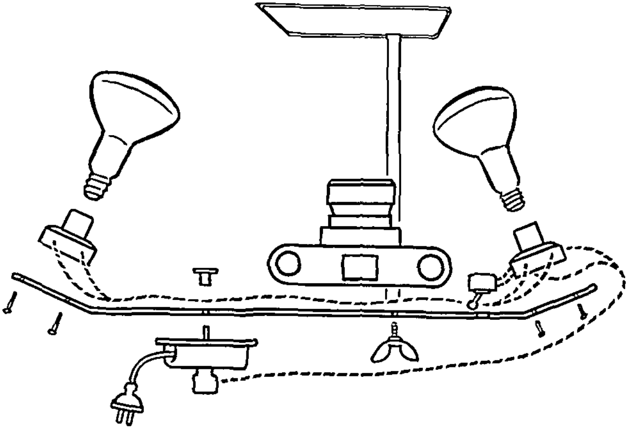

Fig. 2.—Line drawing of apparatus (breakdown).

"on" position and use the safety type switch at the wall for direct connection.

When structures at the bottom of a wound must be shown the bar can be used without the reticule. Cadmium plating reduces reflection and permits autoclaving without rust.

For use in the photography of surgical specimens and close-ups of patients the frame is ideal. Colored backgrounds may be simply pieces of plastic cloth* obtainable from any furniture store in a wide selection of colors, or, better still, trans-

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* Duran.

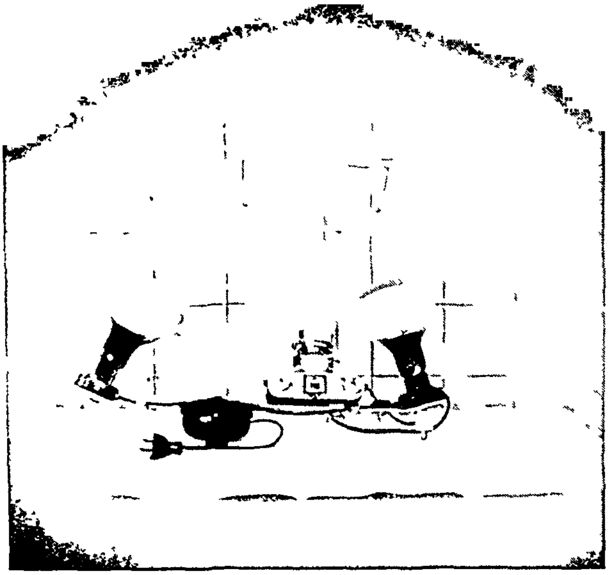

Fig. 3.—Photograph apparatus with close-up frame.

illuminated glass. The inclusion of a ruler and a small piece of paper with the patient's hospital or clinic number is worth while (Figs. 4 and 5).

In photographing larger parts of the patient, such as the trunk or the entire body, a handle can be fixed to the rod carrying the lights and the whole apparatus hand held (Fig. 6).

COMMENT

The value of the fixed focus frame in clinical photography is chiefly in the way in which the operation of taking the picture is simplified: (1) the light is constant; (2) the focus is constant, and (3) the film is constant. With all these factors controlled, a constant setting of the camera can be used. A light meter is not necessary. Therefore it is possible to keep the camera adjusted for the small frame and make a few changes for an intermediate or large frame. I use the 3 plus lens at a setting of 3½ feet at F 16 and 1/100 second for the small frame. For the intermediate and large frames I use a 3 plus lens at infinity and a 1 plus lens at 3½ feet respectively. The F settings or the time settings should be changed.

Colored drapes, particularly light blue or light green, are helpful in outlining the operative fields or for showing lesions on various parts of the body.

For surgical specimens the recommendations set up by Bohrod and Beiter[6] in regard to complementary colors are worth while.

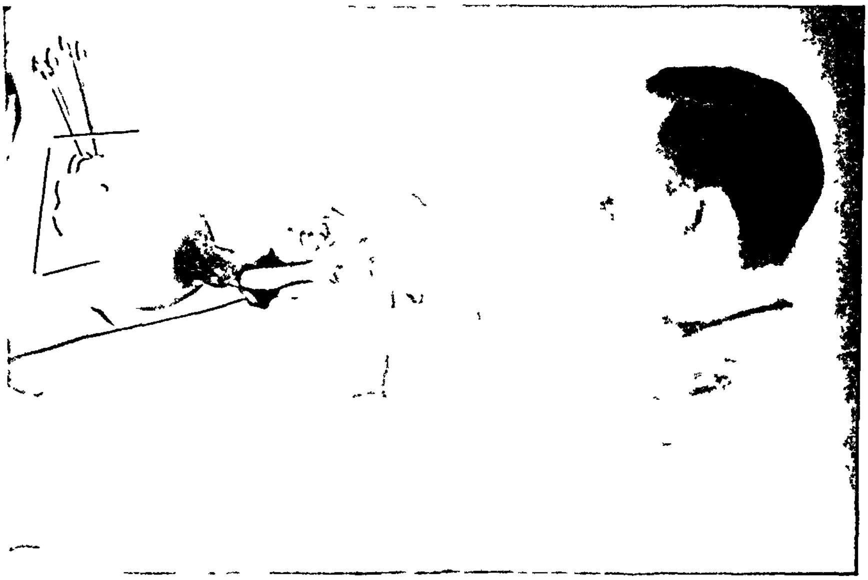

Fig. 4.—Photography of surgical specimens.

For background use in photographing larger portions of the anatomy[14] a pale green or blue tiled wall, as found in many operating rooms, is satisfactory.

SUMMARY

1. An apparatus to simplify clinical photography for the surgeon is presented.
2. This apparatus is not new but a collection of old ideas adapted to an inexpensive 35 mm. camera.
3. The adaptation is such that the entire process can be carried out in a few minutes without loss of the surgeon's time and without prolonging the operation for the patient.
4. The materials needed are few and can be easily kept in the ordinary operating room closet.

RÉSUMÉ

1. On décrit un nouvel appareil photographique clinique plus pratique pour le chirurgien.
2. L'idée n'est pas neuve; simplement quelques modifications personnelles à un camera de 35mm.
3. Il en prend quelques minutes pour adapter l'appareil.

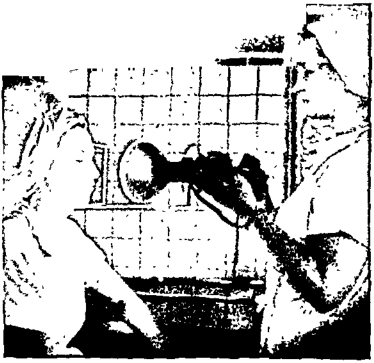

Fig. 5.—Photography of patient (close-up).

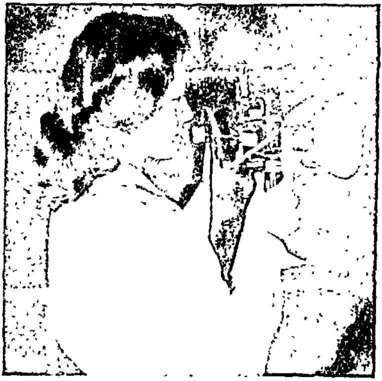

Fig. 6.—Handle for photographing larger parts of the body (in use).

4. Il n'y a pas raison de s'encombrer de beaucoup de matériel; le peu qu'il faut se place très bien dans une armoire ordinaire.

RESUMEN

1. Se presenta un aparato para simplificar la fotografía clínica quirúrgica.
2. En este aparato se adaptaron varias viejas ideas s una cámara de 35 mm. de bajo precio.
3. El proceso completo de adaptación puede efectuarse en unos cuantos minutos, sin pérdida de tiempo para el cirujano o la operación.
4. Se necesitan unos cuantos materiales que pueden guardarse en la propia sala de operaciones.

RIASSUNTO

1. E' presentato un apparecchio per semplificare fotografie cliniche ad uso del chirurgo.
2. Questo non é un nuovo apparecchio ma una collezione di vecchie idee adattate ad una poco costosa macchina fotografica di 35 mm.
3. Il dispositivo é tale che l'int

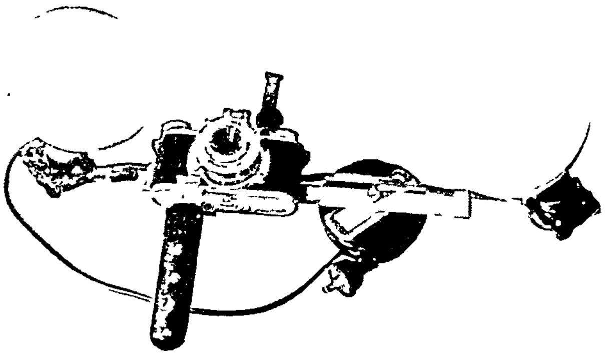

Fig. 7.—Handle for photographing larger parts of the body (detail).

procedimento può essere eseguito in pochi minuti senza sottrarre tempo al chirurgo e alla operazione stessa.

4. Il materiale necessario é esiguo e può essere facilmente tenuto in un ordinario armadio di sala operatoria.

ZUSAMMENFASSUNG

1. Es wird ein Apparat zur Vereinfachung der klinischen Photographie fuer den Chirurgen beschrieben.
2. Der Apparat ist nicht neu, sondern stellt eine Kombination alter Ideen dar, die an einer billigen 35 mm-Kamera angewandt werden.
3. Der ganze Vorgang kann bei dieser Modifizierung in wenigen Minuten ausgefuehrt werden, ohne dass der Chirurg Zeit verliert oder die Operationsdauer verlaengert wird.
4. Die notwendigen Materialien sind gering und koennen mit Leichtigkeit in einem gewoehnlichen Operationssaalschrank untergebracht werden.

SUMÁRIO

1. Um aparêlho para simplificar fotografias clinicas para o cirurgião é apresentado.
2. Este aparêlho não é novo mas a coleção de velhas ideias adotadas com o uso de uma camara de 35 mms. pouco dispendiósa.
3. A adaptação é tal que o processo póde ser levado á cabo em poucos minutos sem disperdicio de tempo.
4. Os objectos necessarios são poucos e podem ser facilmente guardados no armário comum da sala de operações.

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Color plates demonstrating various surgical conditions. *A* (upper left), the appearance of perforated peptic ulcer. *B* (upper right), photograph taken in a case of *intestinal obstruction*. *C* (center left), a dermoid cyst and its contents (*shown on sponge*). *D* (center right), plastic repair of the hand. *E* (center at bottom), photograph of patient with adenoma of the thyroid.

The Automatic Surgical Photographer

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NEW YORK

SURGICAL photography heretofore has been an expensive and exceptional luxury, with consequent irreparable loss of pictorial records of interesting cases. The taking of surgical pictures ordinarily presented more difficulties than the taking of any other type of photograph. Even the best photographers had to be satisfied with surgical pictures which, pictorially and surgically, were far from perfect. The Automatic Surgical Photographer has reversed conditions. Not only is the taking of surgical pictures fully automatic, ideally simple and absolutely dependable, but surgical pictures taken with the Automatic Surgical Photographer are superior to pictures taken by the best photographers. A simple comparison between Figure 1, which shows how surgical photographs are taken by the best professional photographers, and Figure 2, which shows how it is done by the Automatic Surgical Photographer, is sufficient to indicate the validity of these statements.

Figure 1 shows schematically the fundamental differences. Disregarding the fact that surgeons and patients have to adapt themselves to the requirements of the professional photographer, it is obvious that the slant relation of camera and light source to the operative field and diffusion of the beam of light, with consequent distortions and disturbing shadows, are shortcomings that no professional skill can overcome.

Years ago I decided to tackle the problem of producing the perfect surgical film. At that time I put in writing all the requirements essential to do so and asked some colleagues to do the same. The conclusion was that the ideal surgical film should meet the following criteria:

1. It should furnish a candid, not a posed, reproduction of what surgeons and assistants do and see.

2. Blood must appear as blood in thickness and color, whether spurting from an artery, flowing freely from a vein or oozing from tissues. The film should show whether it is mixed with pus, bile or any other secretion; it should also show the actual handicap caused by bleeding.

3. The picture should have great depth in order to show with equal clearness the superficial and the deep tissues and organs.

4. All organs should show their distinctive characteristics as clearly as when visualized directly, even when differences in shape and color are not marked. For instance, loops of intestine should be distinguishable from one another; tendons, nerves and blood vessels should show clearly their distinct characteristics. Organs, instruments, drapery and the hands of the surgeons should appear as they really are, without distortion of color, size, shape or relations.

5. The taking of the picture should not retard, interrupt or handicap in any way the work of the surgeon; therefore, an automatic apparatus should be provided which would make it possible to take excellent pictures at any time of the day or night without the assistance of a professional photographer.

6. The cost of producing colored pictures should be moderate.

All these requirements are met by the Automatic Surgical Photographer, which takes automatically any kind of ordinary, still, stereoscopic or moving surgical pictures and is based on the fundamental principle of intense shadowless light and central focusing. The surgeon, without having his attention distracted in the least from his operative activities, operates it *by simply moving his foot* (**Fig. 2**).

Submitted for publication June 26, 1949.

Before describing the actual apparatus, which stems from one I described in 1934, I should like to emphasize the fact that credit and gratitude are due to those who have perfected the colored films, photoflood bulbs, coated lenses and shadowless operating lamps which make the Automatic Surgical Photographer so desirable an aid to the surgeon.

Many factors combine to produce the fine quality of pictures taken with the Automatic Surgical Photographer. First, the apparatus provides a shadowless and intensely brilliant light. The paramount importance of this factor can be appreciated only if the fundamental differences between black and white photography and color photography are clearly understood. In black and white photography shadows are essential; the beauty and effectiveness of the pictures depend on the skillful use of shadows, so that the lighter points contrast properly with the darker ones. In color photography shadows are detrimental; beauty and effectiveness depend on the faithful reproduction of certain colors which are completely negated or distorted by shadows. Colors are viewed in proportion to the amount of light reflected from them; consequently the film cannot reproduce true colors from shadowed points. Genuinely shadowless light is provided by the operating room lamps, which project the light on the operative field from a circular concave mirror. The shadowless light comes from the periphery of the lamp, the rays assuming a conical direction (Fig. 3). The camera can be secured in the very center of the lamp, without casting shadows, because all the rays of light come from the periphery. This means that the camera is placed in the ideal position for taking pictures of the whole operative field. As a matter of fact, the lens of the camera surveys a field broader than that seen by the surgeon and his assistants; consequently, the camera takes pictures which are actually more informative than direct vision. Faithful reproduction of the operative field, *which is actually a cavity,* is assured by the fact that the deeper portions are as shadowless and as intensely illuminated as the more superficial ones (Fig. 3). This gives the pictures a depth comparable to that obtained by stereoscopy. Ideal illumination of the operative field is automatically assured, because, obviously, the camera remains always in the center of the cone of light whenever operative conditions require a change in the position of the patient and consequent shifting of the light.

The smaller the opening used, the better the effects of depth, but the smaller the opening the more intense must be the light. A simple device assures the intensity of light required. Two photoflood bulbs (Mazda No. 4) are connected in series. One is located within the lamp,

Fig. 1.—Diagrammatic comparison of relations of sources of light, camera, operative field, surgical team and photographer when surgical pictures are taken by professional photographer and by the Automatic Surgical Photographer. *1*, slant relation of camera (*c*) and diffusion of light when pictures are taken by a photographer. Note that, besides inevitable distortion, the shadowed portion (*dl*) of the operative field (*d*) will, of necessity, be missed by even the most clever photographer. *2*, relations of conical beam of light, lens, operative field and surgeons. Note that camera (*c*), being situated at the very center of the operative field, visualizes it even better than the surgeons can, so that the picture will show every structure without distortion. This diagram also shows the assembled Automatic Surgical Photographer. It consists of the surgical lamp, two photoflood bulbs (*a* and *b*), connected in series, camera (*c*) and its support, plumb for exact centering and stand for electrical foot switch. Its efficiency and simplicity of operation make possible the taking of ideal surgical pictures by the mere pushing of the switch pedal by the surgeon's foot, which first disconnects bulb by allowing the full voltage to brighten up bulb *a* and thus illuminates intensely the operative field and automatically activates the camera. *3* (by permission of Carl Zeiss), sketch showing depth of focus of the operating field, so that all structures therein located will be in perfect focus. It shows also how the light is concentrated exclusively on the operative field, so that even when it becomes very intense it does not affect the surgeons, who are outside the beam of light, and why the camera, located in the dead center of the circular light, does not cast any shadow.

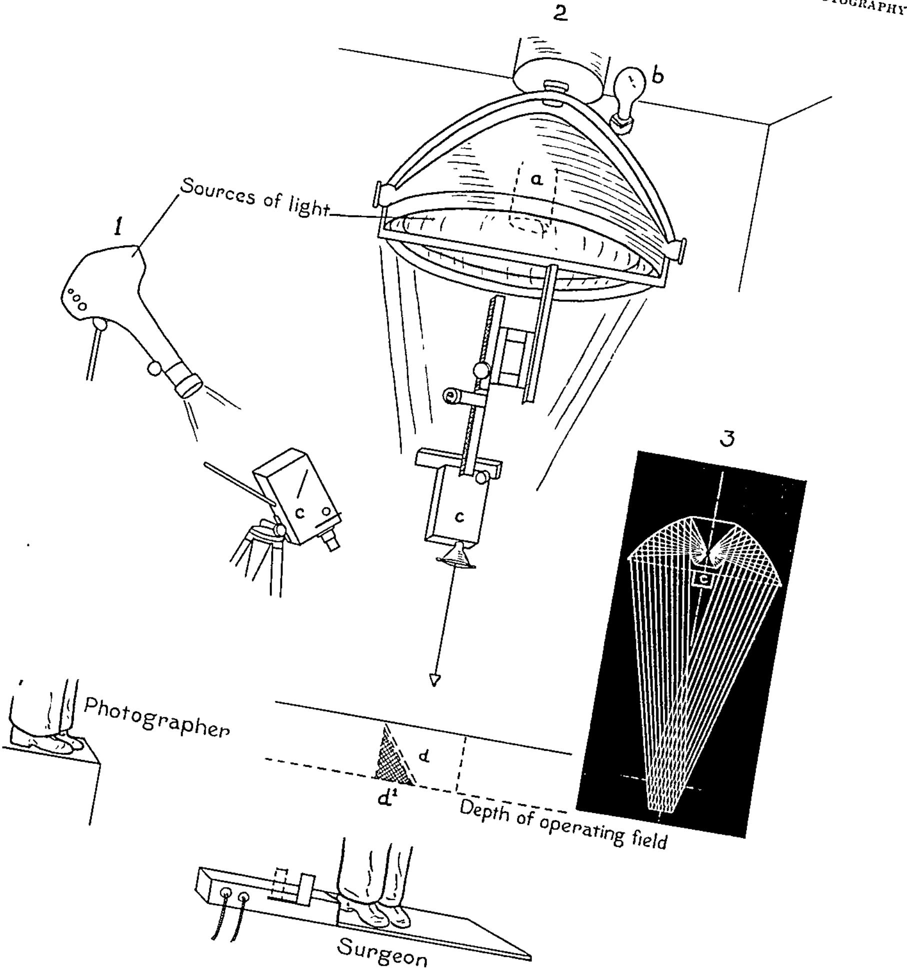
2
b
a
Sources of light
1
c
c
3
c
Photographer
d
d¹
Depth of operating field
Surgeon

Fig. 1.

the other on top of it. Both bulbs are illumined; thus each gets half the voltage of the ordinary electric current and gives as much light as the ordinary bulb used in the lamp for illumination of the operative field. While the pictures are taken the full voltage is turned into the bulb *within* the lamp, by switching off the one on top; this immensely increases the intensity of illumination of the operative field. The full illuminating power of the photoflood bulb, plus the concentration effected by the concave mirror, provides light of suitable intensity under any circumstances.

The Automatic Surgical Photographer consists of: (1) A support for the camera; (2) a wiring switch and support for the bulb on top of the lamp, and (3) a foot switch with wire connections (Fig. 2). The whole can be constructed and set up economically by any electrician.

The support of the camera consists of a strip of aluminum ¼ inch thick and 1½ inches wide crossing the lamp diametrically and secured to its metal frame by two short side strips. To this aluminum strip is screwed the support proper for the camera. In its simplest form it consists of a flat piece of aluminum with a screw similar to those found on tripods and serving the same purpose of securing the camera. The whole is constructed so that when the camera is set its lens corresponds to the exact center of the lamp. If it is desired to use intermittently a 35 mm. and a movie camera, there is no difficulty in constructing a support adaptable to both, provided it is remembered that the lens of the camera must correspond to the very center of the cone of light.

There is no difficulty either in securing the bulb on top of the lamp with a simple clamp or in wiring it so that the bulb can automatically be turned on and off with the foot switch.

The foot switch is just an ordinary two-step switch. The first step turns off the bulb on top of the lamp; the second turns on the current which activates the camera. Obviously it is essential that the foot switch turn off the top bulb *first*, so that the full voltage is turned into the bulb within the lamp; thus the operative field receives the full intensity of the photoflood light before pictures are taken.

The ideal cameras for surgical photography are those electrically motorized. Full electric motorization, in fact, is almost a "must" for cinematographic reproduction of surgical operations. The reason is self-evident. The ordinary spring motors which activate movie cameras need rewinding, which constitutes a hindrance, to say the least, during the operation. The greatest drawback, however, is the possibility that the motor may become unwound before the picture is completed.

Because movies of operations generally require more than the 100 feet of film held by ordinary 16 mm. movie cameras, it is advisable to add increased footage to the motorization of the camera. Fortunately these additions are well standardized and absolutely reliable, and the price is comparatively moderate.

I do not know of any still commercial camera that is electrically motorized. I have constructed such a camera, two of them, in fact: one for plain, the other for stereoscopic pictures. These two cameras work perfectly, though they are only adaptations of parts of various cameras and standard electric devices. However, I wish to emphasize the fact that still pictures can be as well taken with a spring motor camera as with a camera fully electrically motorized, and that stereoscopic cameras are not necessary, because the pictures obtained with the Automatic Surgical Photographer are really three-dimensional. On the market today there are excellent standard still cameras, either already motorized or turned into motorized cameras by the addition of standardized spring motors. The supply of still cameras adaptable to true color reproduction of surgical operations is ample enough to satisfy every requirement. There are 35 mm. cameras for double or single frame pictures, to most of which standard de-

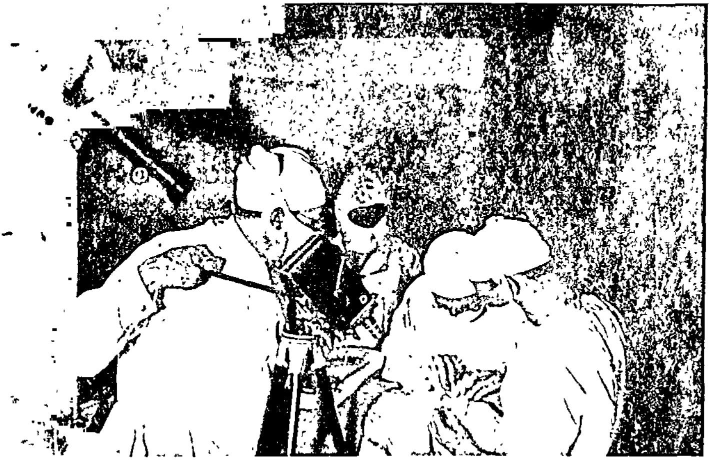

Fig. 2.—Method used by professional photographers in taking surgical pictures.

vices for stereoscopic pictures can be attached. If economy is a consideration, 16 mm. magazine movie cameras equipped with release for still pictures are excellent. After an initial expense of less than $200 for equipment, beautiful and instructive surgical pictures can be obtained for a little less than one-quarter of a cent each. Over 2,000 pictures can be taken on a 50-foot roll of Kodachrome costing, development included, $6. These pictures, 8 by 16 mm., can be visualized on a screen or directly enlarged enough to show every detail satisfactorily. They provide an unimpeachable record for the protection of surgeons and hospitals.

The only difference in the construction of the apparatus when used with a fully electrically motorized camera and with a camera activated by a spring motor is, for the latter, the provision of a small electromagnet which, when activated, will press the starting button of the camera and thus start the photographic process ordinarily initiated by the finger of the photographer.

The Automatic Surgical Photographer is highly adaptable. It will work as ideally for those who must be satisfied with a single camera and a single lens as for those able to afford elaborate equipment.

In describing the *modus operandi* I shall not dwell on the fundamental principles of photography or on factors that vary with each camera and lens and can be explained in detail by the dealer. I shall present only the data necessary to set up the Automatic Surgical Photographer, which is very simple, because the best light for photography is also best for surgery.

Pictures are improved by protecting the lens with a shield. Poor centering and poor focusing are made impossible by centering the lens at the exact height, with a plumb line made of sterilizable material (rustless chain and a plumb), provided at the free end with two hooks, which are fitted in two eyelets placed on the shield or on the metal frame of the lens, if a shield is not used. When the operative field is ready to be photographed, the sterile plumb line is hooked to the lens, so that the plumb falls on the very center of the structures which the surgeon considers the most important. However, because the operative field is actually a cavity of more or less depth and the structures surrounding the central ones often are also important, two points should be remembered. Each type of lens has a peculiar depth of focus; i. e., objects located within it will be perfectly focused. Consequently the surgeon must know the depth of focus of the lenses he uses and set the point of the plumb in the middle of the thickness of the tissues and organs he intends to photograph, so that they are all in perfect focus. A single example will suffice to show how easy it is to focus perfectly even the organs located in the deepest operative cavity. Take the case of an enlarged, adherent gallbladder. The surgeon wishes to show not only the gallbladder as it appears when the abdomen is opened, but its hidden connections with deeper organs and how he separates it from them, plus, perhaps, some additional intervention on the common duct. His experience will tell him that he must deal with organs located about 3 inches deeper than the upper visible surface of the gallbladder. Consequently, after he has set the point of the plumb on the center of the gallbladder, the lamp, and with it obviously the lens of the camera, is lowered 1½ inches. The mathematical focal center will then be exactly in the middle of the thickness of the structures to be photographed, and all will be properly focused.

Coated lenses are preferable because they eliminate glare and bring out truer colors. Ordinary lenses can be coated at moderate prices. For those who can afford them, lenses of various focal lengths are highly recommendable. Their great usefulness in surgical photography lies in the fact that, without the need of moving the camera, the size of the field and of the structures photographed can be immediately changed to suit special purposes. Let us consider the ordinary 50 mm. lens. With this lens at 36 inches the field will be about 28 inches. By simply substituting a 100 mm. lens, one reduces the field to 14 inches and the structures will appear in the photograph twice as large. As a general rule, it can be stated that increase in the focal length of the lens results in proportionate increase of the size of the objects photographed and proportionate decrease of the field.

The distance of the lens from the operative field, the width of the field photographed at various distances and with various lenses, the time of exposure and the opening of the diaphragm must be predetermined with accuracy. This is easy for anyone versed in ordinary photography. If the surgeon is not sure of himself, he should ask the dealer to set up the whole apparatus for him. Once this has been done, the actual taking of the pictures is truly 100 per cent automatic and failure-proof.

A last consideration: Surgeons should familiarize themselves with the use of the exposure meter, because proper exposure is essential to taking ideal pictures under any circumstances.

Two factors will render advisable the modification of the opening of the diaphragm and/or the time of exposure. One is the gradual burning of the photoflood bulb, with consequent decrease in intensity of light. The other is the reflection of light, which greatly differs in certain organs and pathologic conditions. When dark organs like the liver or an enlarged spleen occupy the center of the picture they will obviously reflect light differently from a shining, semitransparent large ovarian cyst; consequently the proper opening of the diaphragm and/or time of exposure should be determined with an exposure meter.

The taking of pictures by this device during an operation is no impediment whatever to the normal course and performance of the operative procedure. When the surgeon decides that a picture should be taken, there need be no modification in operating routine. The operation proceeds unhampered and undisturbed; a

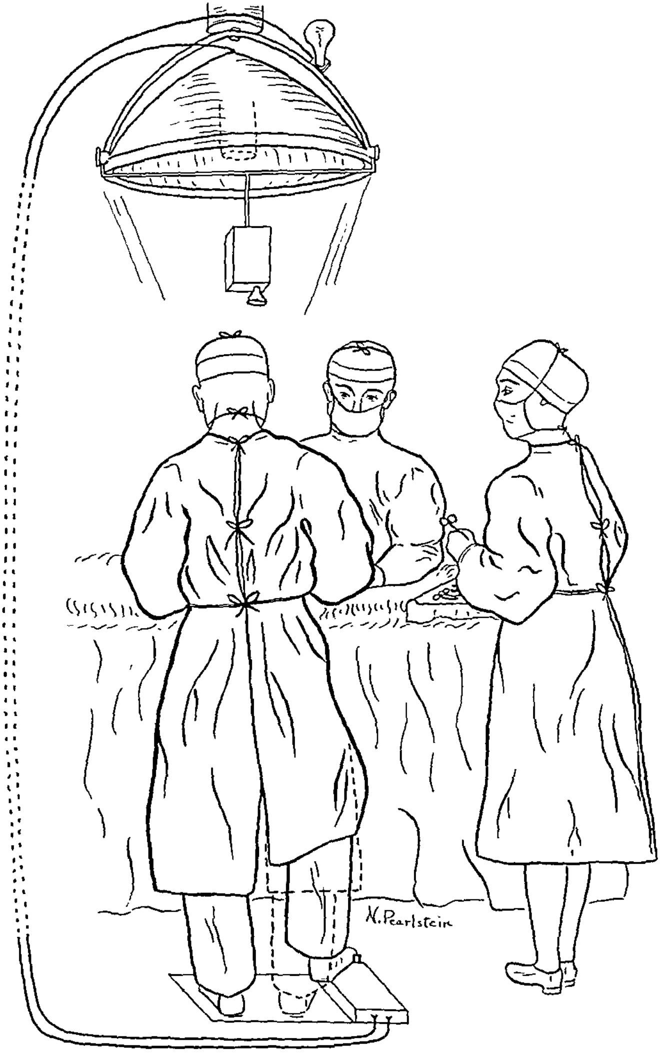

Fig. 3.—Sketch showing how a mere turning of the foot of the surgeon activates the Automatic Surgical Photographer.

mere motion of the surgeon's foot (Fig. 2), is all that is required. This soon becomes as automatic as gear shifting. Even the sudden increase in the intensity of the light passes unobserved after a while, because it does not affect directly the eyes of the operating staff.

SUMMARY

The Automatic Surgical Photographer, a new device for the pictorial recording of surgical procedures, is highly recommended by the author for the following reasons:

1. It can be used in taking whatever kind of pictures are desired; still photographs, three-dimensional pictures and moving pictures.
2. Its accurate reproduction of natural color is outstanding.
3. It is simple to operate, requiring only a slight movement of the surgeon's foot.
4. Its use involves no interference whatever with the progress of the operation.
5. It is easily installed, and the cost of its use is moderate.

In the author's opinion the Automatic Surgical Photographer should be standard equipment in every operating room, not only because of the scientific value of accurate pictorial representation but as a protection for both surgeons and hospitals.

RÉSUMÉ ET CONCLUSIONS

L'appareil photographique automatique employé en chirurgie permet la prise en ciné ainsique des photos à trois dimensions en couleur d'une beauté et d'un naturel insurpassables tout en ne nuisant pas du tout au cours de l'opération. Non seulement cet appareil peut prendre de meilleures photographies qu'un photographe expérimenté, mais il permet au chirurgien, par un simple mouvement de pieds, d'enregistrer automatiquement un temps opératoire à l'instant propice et voulu. Il est toujours de garde jour et nuit à l'instant précis ou ses services sont requis. D'installation facile et de maniement automatique, il n'est pas d'un coUt élevé. L'équipement doit être standard dans toutes les salles d'opérations modernes parce que rien n'est plus instructif qu'une reproduction imagée et fidéle de chaque opération et spécimen. A l'aide de cet appareil on peut obtenir de telles fiches à un coût minime entoutes circonstances.

RESUMEN Y CONCLUSIONES

El Fotógrafo Quirúrgico Automático hace posible la toma de películas cinematográficas quirúrgicas, así como fotografías a colores tridimensionales de insuperable belleza y exactitud, efectuándose la operación sin el más ligero inconveiente. No solamente puede tomar fotografías quirúrgicas mucho mejor que el mejor fotógrafo, sina que puede hacer lo que a nadie sería posible hacer, pues por la simple acción del pie del cirujano puede registrar de inmediato ocurrencias operatorias automáticamente, instantáneamente e idealmente. Se encuentra siempre listo para servir, día y noche, en el instante en que son requeridos sus servicios. Puede instalarse fácilmente y funcionar automáticamente a un costo muy moderado. Debería ser equipo regular en toda sala de operaciones moderna, porque no hay nada más instructivo que un registro fotográfico exacto de cada operación y pieza operatoria. Estos registros pueden obtenerse con este invento al costo de unos cuantos centavos en todas circunstancias.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

Der "Automatische Chirurgische Photograph" ermoeglicht sowohl die Herstellung chirurgischer kinematographischer Filme als auch stereoskopischer Farbbilder von unuebertrefflicher Schoenheit und Naturtreue, ohne den Ablauf der Operation im geringsten zu behindern. Nicht nur kann der Apparat chirurgische Aufnahmen viel besser ausfuehren als der beste Photograph, er kann auch etwas leisten, was auf keine andere Weise erreicht werden kann; auf eine einfache

Drehung des Fusses des Chirurgen hin naemlich kann der Apparat ploetzliche Vorgaenge waehrend der Operation automatisch, unverzueglich und mit idealer Genauigkeit festhalten. Der Apparat ist stets arbeitsbereit, Tag und Nacht, im Augenblick wo seine Dienste gebraucht werden. Er kann leicht angeschlossen werden und arbeitet automatisch mit sehr geringem Kostenaufwand. Der Apparat sollte zur obligaten Ausstattung jedes modernen Operationssaales gehoeren, weil es nichts Lehrreicheres gibt als eine naturgetreue bildmaessige Registrierung jeder Operation und jedes chirurgischen Praeparates. Derartige Dokumente koennen mit Hilfe der Maschine in allen Faellen fuer wenige Pfennige hergestellt werden.

RIASSUNTO E CONCLUSIONI

Lo “Automatic Surgical Photographer” rende possibile sia la ripresa di cinematografie chirurgiche, sia fotografie a colori tridimensionali di insuperabile bellezza e fedelta’, durante il procedimento chirurgico e senza il minimo disturbo.

Detto apparecchio non solo puo’ ritrarre fotografie chirurgiche perfette, quali nessun fotografo potrebbe, quanto puo’ con un semplice movimento del piede del chirurgo ritrarre particolari operatori istantaneamente, automaticamente in maniera ideale. E’ pronto sempre, giorno e notte, serve all’istante.

L’apparecchio puo’ essere installato facilmente ed essere tenuto in uso ad un costo essai moderato. Dovrebbe essere una normale attrezzatura di una moderna sala operatoria perche’ nulla e’ piu’ istrutivo di una fedele riproduzione di ogni operazione e pezzo patologico.

On questo dispositivo tali riproduzioni possono essere ottenute al costo di poche lire in ogni circostanza.

SUMÁRIO E CONCLUSÔES

O Fotógrafo Cirurgico Automatico tórna possivel a filmagem de peliculas tri-dimensionais de inegualavel beleza e fidelidade e sem o menor estôrvo. Além de tomar melhóres filmes do que qualquer fotógrafo, pelo simples apertar de um botão de pé, o proprio cirurgião recólhe instantanea e automaticamente, de uma maneira ideal, as ocorrencias momentaneas do áto cirurgico. Está sempre pronto para ser utilizado, dia e noite, no momento que seus serviços são requeridos. Póde ser facilmente instalado e usado automaticamente por um preço bastante módico. Deve fazer parte de todos os conjuntos cirurgicos modernos porque não ha nada mais instrutivo do que um filme fiel de toda operação e do espécime. Com este acessorio, tais documentarios podem ser obtidos por um custo irrisorio em todas as circunstancias.

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Roentgen Irradiation of the Adrenal Glands*

Results of Indirect Hormonal Research

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SOME time ago it was observed that, in certain organisms, roentgen irradiation produces variations in the blood sugar content.[1] This effect has been attributed primarily to the adrenal gland, which, as is known, varies functionally in response to roentgen rays applied either directly over the glandular zone or indirectly over the body area or a segment thereof. With reference to direct application, a case is cited[2] in which chronic adrenal insufficiency was produced by irradiation of a neoplasm on the dorsolumbar portion of the vertebral column. Exposure of the adrenal gland to roentgen rays may also eventuate in hemorrhage, degenerative change, reduction of lipids[3] and morphologic modifications, which occur predominantly in the adrenal cortex but may affect the medulla in a lesser degree.[4] As for indirect application of roentgen rays, Desjardin[5] in 1928 obtained evidence of this action by observing that irradiation of the body produces adrenal hypertrophy, which does not appear when the area directly over the gland is irradiated. Lately, White and Dougherty[6] noticed lymphoid changes produced in rats by body irradiation, which resulted at the expense of the integrity of the adrenohypophyisial system. Patt[7] has said that total body irradiation is accompanied by diminution of adrenal cortical cholesterol. He also pointed out a similarity between the symptoms of experimental adrenal insufficiency and those produced by irradiation. Ellinger[8] confirmed this last observation, noting that mortality among the irradiated rats diminished with use of acetate of desoxycorticosterone.

The effects of direct roentgen irradiation over the adrenal gland are difficult to distinguish from those of indirect irradiation, owing to the impossibility of confining the irradiation to the glandular zone and also, as Le Blond and Segal[9] pointed out, to the fact that roentgen rays produce chemical compounds in the organism, products of cellular disintegration which exert their action at a distance from the irradiated point. Nevertheless, from experience thus far recorded, there is evidence that roentgen rays produce adrenal changes both by direct application the gland and by indirect application over the body area or segments thereof, and that these changes can be related to functional variations. There is also evidence that indirect roentgen irradiation causes modifications in the blood sugar level.

With regard to blood sugar variations following direct irradiation of the adrenal glands in man, and excluding some experiments[10] in the treatment of diabetes mellitus from which no conclusions can be drawn, their are no reports available, nor have these. Variations in the blood sugar level and their relation to the functional changes produced in the gland have not been reported heretofore.

In consideration these points, and with the purpose of ascertaining the influence of adrenal irradiation in man, particularly on the blood sugar content in relation to glandular activity, my associates and I have irradiated the adrenal zone and observed the resultant blood sugar curves and the circulating eosinophils, the latter as an indicator of adrenal cortical function. Recant, Hume, Forsham and Thorn[11] *consider this test very sensi-*

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*[illegible] paper [illegible] the First Ciba Hormonal C[illegible] [illegible] 1951, Mexico. Presented under the patronage of [illegible] F.I.C.S. (Hon.), [illegible] F.I.C.S. (Hon.) and Prof. Dr. [illegible] [illegible] 15, 1951.

tive, claiming for it certain advantages over determination of the cetosteroid excretion.

We have previously observed cytohematic variations, after direct irradiation of the adrenals, which are related to changes of adrenal function.[12] This research has been done in an attempt to identify the phenomena related to adrenal function, since this knowledge may prove to have some therapeutic value.

Earlier Work.—It is well known that both the presence and the functional state of the adrenal tissue determines certain changes in carbohydrate metabolism, in the absorption of dextrose through the digestive tract, in the blood sugar curve, in hepatic glycogen content, in the oxidation of dextrose and in glyconeogenesis. It is important here to note the effects of the adrenal gland on these glycemic values, because variations noted after irradiation are closely related to them; however, it should be kept in mind that the blood sugar content is merely an expression of the greater or lesser functional magnitude of other physiologic phenomena, particularly the oxidation of dextrose and glyconeogenesis.

In almost all animal species, adrenalectomy results in decrease of the blood sugar content. In the normal rat, hypoglycemia is produced;[13] in the rat rendered diabetic by pancreatectomy it produces a partial diminution in excretion of sugar by the urine as compared with that of control animals.[14] In the adrenalectomized cat there is a decrease in the blood sugar content due to the adrenal cortical insufficiency resulting from the operation,[15] which also effected improvement of diabetes in the pancreatectomized animal. In the dog[16] the effect is the same as in the cat;[17] a decreased excretion of sugar in the urine is noted when the dogs are treated with phloridzin.[14a] Finally, in the monkey, adrenalectomy produces marked hypoglycemia.[18]

This glycemic decrease in adrenalectomized animals is referable to the adrenal cortex, since anatomic or functional suppression in the medulla does not, without participation of the cortex, produce such variation.[19]

In contrast to the effects of adrenalectomy, the administration of adrenal extract produces hyperglycemia,[20] augments diabetes in partially pancreatectomized animals;[21] and other animals after adrenalectomy and pancreatectomy[22] and increases the urinary excretion of sugar in adrenalectomized animals treated with phloridzin.[23] Lately it has been noticed that such effects of adrenal extract are due to the sugar-regulating hormones or "S" hormones, which are: 11, oxysteroids, Compound A of Kendall (11, dehydrocorticosterone), Compound B of Kendall (corticocosterone), 11, 17 oxysteroids, Compound E of Kendall (17, hydroxy 11, dehydrocorticosterone) and Compound F of Wintersteiner (17, hydroxycorticosterone),[24] the two last mentioned being the most active of all.[25]

The association of adrenal cortical hyperfunction with hyperglycemia and of adrenal cortical hypofunction with hypoglycemia is observable also in man. Hypoglycemia is frequently encountered in cases of Addison's disease,[26] associated with a diminished excretion of glycogenic corticoids.[27] Also, although not with the same frequency, a similar glycemic variation exists in cases of cortical hyperplasia or tumor and in cases of diabetes mellitus;[28] in such processes an increase in excretion of glycogenic corticoids is noted.[27] Besides, administration of Compound E of Kendall to man produces hyperglycemia, although it does not induce a tendency to diabetes.[29] Aside from these relations, which are more or less established, there exists an apparent contradiction; i.e., the association of diabetes mellitus with Addison's disease.[30] This, as Emerson, Parkin and Howell[31] have suggested, may be due to a dissociation in the production of glycoregulator corticoid hormones with respect to the other hormones of the adrenal cortex; these authors have observed that the excretion of glycocorticoids is maintained independently of the presence of manifestations of adrenal cortical insufficiency.

Finally, it should be pointed out that, although anatomic or functional suppression of the adrenal medulla does not produce glycemic variations in the experimental animal, we have observed both in normal man and in diabetic patients a fall in the blood sugar level after denervation of the adrenal glands.[32]

Hence, from what has been said, the relation of adrenal cortical hyperfunction to hyperglycemia and that of adrenal cortical hypofunction to hypoglycemia exists both in animals and in man, while in man under basal conditions appears the relation of adrenomedullary hyperfunction to hyperglycemia and that of adrenomedullary hypofunction to hypoglycemia.

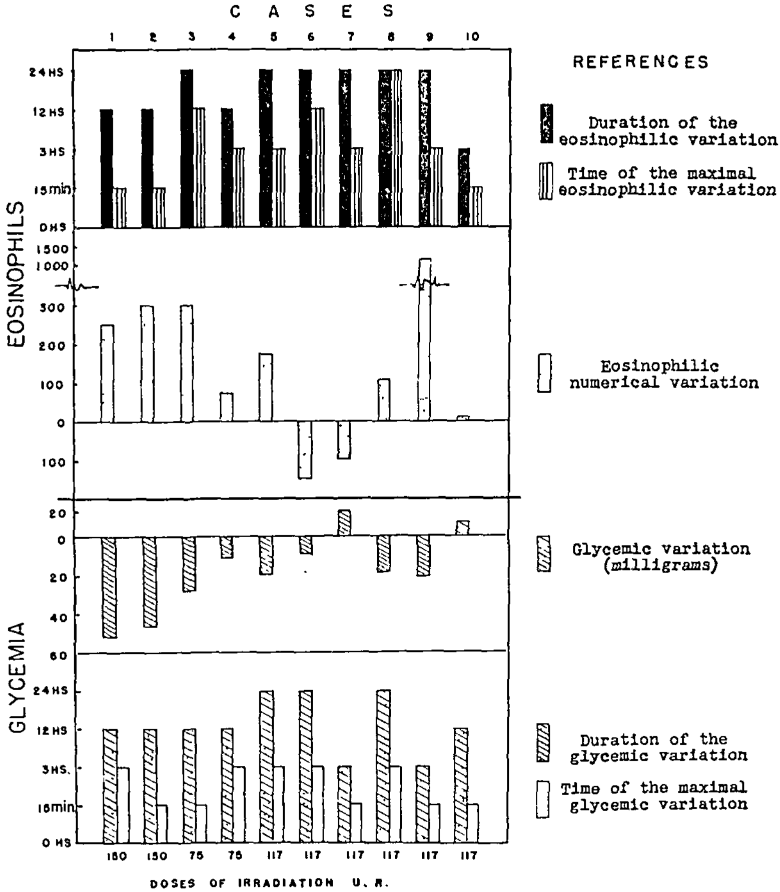
With regard to eosiniophilic variations related to the adrenal gland, Dalton and Selye[33] in 1939 showed that esoinopenia in rats is one characteristic of the alarm reaction; and in 1948 Hills, Forsham and Finch[34] showed that the ACTH hormone and Compound F of Wintersteiner produce a decrease in the number of eosinophils (this was corroborated by several investigators).[35] Clinically it has been observed that in the presence of Cushing's syndrome, in which the glycogenic cetosteroids as well as the glycogenic corticoids are usually increased, eosinopenia is observed.[28d] With adrenal insufficiency, in which both the cetosteroids[36] and the glycogenic corticoids[27] are invariably diminished, eosinophilia is present.[37] In the syndrome of virilism, in which the cetosteroids are markedly increased[36] while the glycogenic corticoids are normal,[27] there is no abnormal eosiniphilic variation.[37b] This clinical parallelism between the variations of the glycoregulator hormones and the eosinophils has been verified by several investigators, and these hormones have been considered to exert great influence upon the eosinophils.[25] In addition, the clinical relation of adrenal cortical hyperfunction to eosinopenia and that of adrenal cortical hypofunction to eosinophilia are verified by the experimental evidence and clinical applications of Forsham, Thorn, Prunty and Hills.[38]

With respect to the relation between eosinophils and epinephrine, Speirs and Meyer[39] observed that the latter substance produces eosinophilia in adrenalectomized animals, while in normal animals it produces eosinopenia. This action is attributed to the fact that epinephrine increases adrenal cortical secretion in several ways.[40] Finally, it has been shown in man that injection of epinephrine produces eosinopenia,[41] which is less intense in the presence of Addison's disease or anterohypophysial insufficiency.[11] It should be mentioned also that the injection of nor-epinephrine has almost no decreasing effect on the number of eosinophils.[42] Thus it may be concluded that epinephrine produces eosinopenia which depends on the functional state of the adrenal cortical tissue, producing only eosinophilia when it acts independently of this tissue.

Procedure.—Ten experiments in irradiation of the adrenal glands were per-

Method Used in Irradiation Studies

Group	Case Nos.	Kilovolts	Milliamperes	Distance, Cm.	Filtration	Time, Minutes	Dose, Roentgens
A	1 and 2	180	5	50	0.5 mm. Cu, 1 mm. Al	5	150
B	3 and 4	180	5	25	0.5 mm. Cu, 1 mm. Al	5	75
C	5, 6, 7 and 8	130	10	50	3 mm. Al	5	117
D	9 and 10	130	10	50	3 mm. Al	3	117



formed on 5 healthy persons, the blood sugar content having been ascertained by the method of Folin and Wu[43] before irradiation and at fifteen minutes, three hours, twelve hours and twenty-four hours after irradiation. The number of eosinophils was determined by the technic of Thorn and Forsham,[44] modified from Dunger; these were recorded at the same intervals as the dosages of dextrose.

We proceeded as fast as possible to avoid errors caused by cellular lysis. The type and dosage of irradiation were established by Dr. Manuel F. Madrazo (see table).

Results.—In all 10 cases in this series a variation in the blood sugar content was produced; in 8 a decrease was observed, and in the remaining 2 an increase. In 5 cases the point of maximum intensity in variation was found to correspond to the value for blood sugar as determined three hours after irradiation; in the other 5 it corresponded with the value noted fifteen minutes after irradiation. The duration of glycemic variation was twelve hours in 5 cases, twenty-four hours in 3 cases and three hours in 2 cases. Expressed in milligrams, the decrease in blood sugar content from the pre-irradiation level ranged from a minimum of 10 to a maximum of 54 mg. In the cases in which an increase was noted, the increase amounted to 20 mg. in 1 case and 10 mg. in the others. Neither increase nor decrease showed any relation as to character or intensity with variation of the stimulus. With 2 persons subjected to the same type of stimulus, an increase in blood sugar was obtained in one adrenal gland and a decrease in the contralateral gland (Cases 5 and 6 and Cases 7 and 8).

Similarly, variations in the number of eosinophils were observed in every case; in 8 an increase was noted, and in the other 2 a decrease. The point of maximal intensity of variation in 4 cases corresponded with the count three hours after irradiation; in 3 cases, with the fifteen-minute post-irradiation count; in 2 cases, at the twelve-hour count, and in 1 case with the count taken three hours after irradiation. The variations lasted twenty-four hours in 6 cases, twelve hours in 3 cases and three hours in 1 case. Increase above the preirradiation eosinophil count ranged between a minimum of 12 and a maximum of 1.173; decrease below the same in 1 case was 156, and in another, 96. Neither increase nor decrease in the number of eosinophils varied with variation of the stimuli employed. Two persons treated with similar stimuli showed an increased number of eosinophils in one adrenal gland and a decreased number in the other (Cases 5 and 6 and Cases 7 and 8).

In comparing the character and intensity of both glycemic and eosinophilic variations after irradiation, it was observed that in 8 cases an increase of eosinophils and a decrease of the blood sugar content were associated and that this relation was not present in the other 2 cases (it should be pointed out, however, that in these 2 cases both the glycemic and the eosinophilic variations were of minimal intensity, whereas both were of marked intensity in the other 8). Also, the intensity and duration of the eosinophilic variations were greater than those of the glycemic variations as related to levels noted under physiologic conditions. In the cases in which the two kinds of variation coexisted after irradiation, the eosinophilic variation greatly exceeded the variation in the blood sugar level.

COMMENT

The most important observation obtained from this study is the frequency, duration and intensity of the glycemic decrease associated with a numerical increase of eosinophils. Except in Cases 6 and 10 (in which both types of variation were slight) a definite relation between these two factors was noted, and it seems justifiable to conclude that the variations in both were due to the irradiation. Slight modifications in the blood sugar level alone may have little or no significance, but the obvious relation between these modifications and the variations observed in the eosinophil count indicates a change of adrenal function directly attributable to roentgen irradiation.

Theoretically irradiation of the adrenal glandular zone stimulates both cortex and medulla. It is necessary, therefore, to ascertain which of these two components is responsible for the variations observed.

The numerical increase of eosinophils may indicate (1) inhibition of adrenal cortical secretion, since eosinophilia is associated with secretory decrease; (2) inhibition of medullary secretion associated with normal function of the cortex, since in normal man the secretion of epinephrine seems to be continuous (as we have observed in previous studies[34] of functional adrenal denervation, using the blood sugar level as the biologic reactor) *and since epinephrine stimulates adrenal* cortical secretion in several ways; and (3) stimulation of the adrenal medulla by deficient cortical function analogous to that observed by Speirs and Meyer,[39] who observed *that epinephrine produces* eosinophilia in the absence of adrenal cortical tissue.

Decrease in the blood sugar content, on the other hand, may be taken to indicate (1) inhibition of cortical secretion, since hypoglycemia is associated with secretory decrease, or (2) inhibition of medullary secretion, since functional denervation of the adrenal gland produces hypoglycemia.[34] The coexistence of an increased eosinophil count and a decreased blood sugar content may form the substratum of the responses observed. Since epinephrine is only one element to be considered with regard to cortical secretion, the medullary factor alone cannot explain the presence of eosinophilia of the magnitude observed. Also, with respect to the third factor mentioned above in discussing eosinophilia, no case of adrenal insufficiency similar to the experimental case of Speirs and Meyer[39] has been observed by us. Thus, although participation of the adrenal medulla cannot be disregarded, it is our opinion that the decreased blood sugar content and the increased eosinophil *count may be due primarily to inhibition* of adrenal cortical secretion.

With regard to the comparatively slight variation in the blood sugar level as compared with that in the eosinophil count, it seems logical to assume that the difference may be due to the homeostatic mechanisms that act upon carbohydrates,[45] the majority of which tend to prevent decreases in the blood sugar content.[45d] It seems reasonable to suppose that the glycemic levels observed are to some extent compensated by such mechanisms. This is in contrast to the variations in the eosinophil count, for which no similar homeostatic mechanism appears to exist.

It is interesting to note that these adrenal cortical hormonal compounds affect *the number of circulating eosinophils* by their influence over carbohydrate metabolism, since the eosinophil count is considered to indicate variation in secretion of the 11, 17 oxysteroids. They also determine the urinary secretion of this group[46] and the uric acid-creatinine relation.[47]

In our opinion, therefore, the increase in blood sugar and the decrease in eosinophils in this study were due primarily to inhibition of adrenal cortical secretion and particularly of the 11, 17 oxysteroids.

Finally, the fact that neither the glycemic nor the eosinophilic variations, in their respective increase and decrease, showed any relation to the stimulus as *regards either character or intensity,* if taken together with the fact that both responses were produced in the same subject by means of identical stimuli, indicates that *responses produced by roentgen rays in the adrenal glands depend in part on the functional state of each gland.*

CONCLUSIONS

1. Glycemic variations are produced in man by roentgen stimulation of the adrenal glands.

2. These *variations consist primarily* of a decrease in the blood sugar content *and an increase in the number of circulating* eosinophils. In the author's opinion, this effect is attributable to inhibition of adrenal cortical function, particularly of the secretion of 11, 17 oxysteroids.

3. The extent of glycemic variation from the normal is less than that ob-

served in the number of eosinophils. This may be attributed to the effect of the homeostatic mechanisms which influence the glycemic level.

4. In this study there was apparently no relation between the particular stimulus employed and the type of response observed.

5. The adrenal glands of one subject may show different responses to identical stimuli. This may be attributed to the functional state of each adrenal gland considered separately from the contralateral gland.

6. The variations in blood sugar content associated with eosinophilic variations, together with other cytohematic and hematochemical changes, may prove to be of value as a contribution to knowledge of the adrenal glands, and their function in certain clinical and surgical manifestations of disease. They may also be of some therapeutic importance, particularly to supply the indications for irradiation in some pathologic states referable to or involving the adrenal glands. Also, if a surgeon is confronted with a patient who has undergone total unilateral adrenalectomy, he must ascertain the presence and function of the contralateral gland in order to avoid disaster.

SUMMARY

The glycemic variations associated with changes in the eosinophil count have been studied as constituting an indirect adrenal hormonal expression, the purpose being to evaluate the phenomena related to normal and abnormal function of the adrenal glands and the possible application of these phenomena to certain clinical and surgical conditions, as well as to estimate their possible therapeutic value.

RÉSUMÉ

Les variations de la glycémie avec une éosinophilie différenciée ont été étudiées en rapport avec le s hormones des glandes surrénales. Le but de ces études est pour apprécier la fonction normale ou anormale de la surrénale et de t enter d'expliquer certains phénomènes tant au point de vue clinique que chirurgical et d'évaluer la possibilité d'une thérapeutique.

RESUMEN

Se estudian las variaciones glucémicas asociadas a las eosinófilas, como expresión hormonal suprarrenal indirecta, empleando la estimulación röntgen, con fines a la identificación de fenómenos relacionados con la presencia y función suprarrenal, de posible utilidad en determinadas condiciones de importancia clínica, quirúrgica y quizás terapéutica.

RIASSUNTO

Le variazioni glicemiche associate con variazioni eosinofile sono state studiate quale espressione indiretta degli ormoni surrenali, con lo scopo di valutare il fenomeno in rapporto alla funzione normale e patologica delle ghiandole surrenali. Sono studiate le possibili applicazioni di tali fenomeni in talune condizioni cliniche e chirurgiche, costi' come sono considerate le possibili applicazioni terapeutiche.

SUMÁRIO

As variações glicemicas associadas com alterações de contagem dos eosinófilos foram estudadas como constituindo uma expressão hormonal adrenalinica, o proposito disso sendo avaliar os fenomenos relacionados com a função normal e anormal das glandulas adrenalinicas e a possivel aplicação destes fenomenos á certas condições clinicas e cirurgicas, como tambem estimar seu possivel valôr terapeutico.

ZUSAMMENFASSUNG

Der Verfasser untersucht die Veraenderung des Blutzuckerspiegels im Zusammenhang mit Veraenderungen der Zahl der eosinophilen Zellen im Blut als indi-

rekten Ausdruck der hormonalen Funktion der Nebenniere. Sein Ziel ist, die beobachteten Phaenomene zur normalen und pathologischen Funktion der Nebenniere in Beziehung zu bringen, die Beobachtungen auf gewisse klinische und chirurgische Krankheitszustaende anzuwenden, und—darueber hinaus—die Moeglichkeiten ihres therapeutischen Wertes abzuschaetzen.

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The United States Chapter of the International College of Surgeons

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Drainage of the Infected Peritoneal Cavity

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PASSAIC, NEW JERSEY

DRAINAGE of the infected peritoneal cavity has long been a topic for discussion and investigation. As a result, means have been devised to drain the abdomen for general peritonitis, local peritonitis or local abscess. Up to the present time, however, no particular method meets the requirements for satisfactory performance, under different circumstances or even in identical cases.

During the past decade Steadman, Ritter, McCarthy, McCrea and others have designed and used apparatus for positive suction to evacuate the bladder. Babcock designed and perfected the stainless steel sump drain for intraperitoneal drainage in his perineal colostomies. Burnett used the sump drain in his peritoneal infections. Most of Burnett's cases were concerned with soiling of the peritoneum due to visible rupture of the appendix. However, throughout the years the basic principle of positive suction has remained in use in spite of various modifications and improvements on the sump drain.

About two years ago we began to use irrigation combined with positive suction, and the following report gives the results of our experience with this modification under a variety of circumstances.

In offering this article we have a twofold purpose: (1) to encourage practitioners who have not tried it to use this method of drainage; (2) to stimulate surgeons in general to review their own use of the drain and to revise, improve, adapt and experiment, with a view toward developing the ideal method of handling the problem of drainage, which is always with the surgeon. Even while this article is being prepared we are experimenting with plastic drains in the hope that they will prove to be more innocuous than vitallium.

Regardless of the outcome of the aforementioned change, we are gratified as surgeons with the results of our experiments, and—what is even more important—they have proved a blessing to the patients. The surgeon's prime concern is to make sure that when he has corrected a pathologic condition the patient will suffer the least possible after-effects. The stormy convalescence, the fascial necrosis, the postoperative hernias, etc., which so often follow the use of gauze, the Penrose rubber tube, the hard rubber tube, or the cigarette drain are all too well known. With these drains, the drainage is accomplished primarily by overflow, the drains themselves serving to guide the exudate to the outside dressing. However, even when they effect drainage, the accompanying disadvantages often outweight the advantages. Gauze drains usually block drainage unless there is a thin exudate. Hard rubber drains are irritants. Other drains may occasionally produce adequate results, but the mechanical factors of irritation and plugging, with the resulting slight drainage, result in such morbid conditions as intractable adhesions, fistulas or postoperative obstructions. Added to these is the lengthened postoperative hospitalization.

It must be said that our drain has certain disadvantages. Since it is made of rubber, it causes some irritation, although considerably less than other drains do. This is perhaps due to the actual composition of the rubber tubing itself, together with the shorter time the drain is left in position, and the irrigation. The mechanics of this drain are comparatively simple, as an examination of the list of parts and the pictured assembled apparatus will show, but they must be understood by attending nurses and interns as well as by

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the surgeon if the drain is to operate efficiently and the optimum results are to be obtained. Common sense must guide the surgeon in judging the amount and type of exudate and the regulation of the amount of irrigation.

Apparatus.—1. The U-shaped tube, 9½ inches (23.7 cm.) long, is cemented together from the tip to about 5½ inches (13.7 cm.) from the top, thus leaving two free limbs at the top to allow suturing of the skin between them in order to hold it in position. At the tip each limb is sealed off from the other. The tubing itself is of pure gum, made from selected fine pale crepe containing none of the customary rubber fillers. Naturally, the exact proportions of the ingredients used are patented by the manufacturer. It has been vulcanized with sulphur and accelerated with and organic accelerator, which is facilitated with some amount of zinc oxide and a fatty acid. The outer walls have been perforated at intervals of about ¾ inch (1.9 cm.) for a distance of about 3 inches (7.5 cm.)

2. A regular intravenous set-up (to be used for irrigation).

3. A thermotic drainage pump (Gomco).

Technic.—Intermittent vacuum pressure suction is created by a thermotic drainage pump. This applies 5 seconds of gentle suction (90 to 120 mm. of mercury) in every twenty seconds. The intermittent suction allows a pool of solution with exudate to be formed in the rest period. Through the other tube, either continuously or intermittently, whichever the circumstances indicate, physiologic solution of sodium chloride containing 200,000 units of penicillin per liter is dropped at the rate of 40 drops or less per minute. This bathes the area and thins out the exudate. There is not enough irrigation pressure to disseminate infection. The exudate is now more easily removed with its toxins, living bacteria and necrotic tissue. The neighboring bowel is kept floating, thus reducing the danger of adhesions or fistulas or the accumulation of exudate in a dead space. In addition, the type of exudate e.g., hemorrhage is easily visible. If the flow of the irrigating fluid is too rapid, the dressing will become saturated owing to the lack of balance between inflow and outflow. If there is no return from the suction, the inflow of fluid should be reduced to 20 drops or less; or both inflow and suction should be interrupted, say for an hour, after which each successive interval may be lengthened or shortened according to the return of the suction. To prevent particles of thick exudate from adhering to the openings of the drain and thus plugging the suction side, the connections are reversed approximately every twenty-four hours; i.e., the drip is then placed on the suction limb of the drain and the suction line is attached to the drip limb. In order to keep the tubes erect, they are either splinted (with pieces of tongue depressors) or covered by a small cradle above the dressing.

In the case of an abscess the drain is placed in the center and as deeply as possible. In other types of infection, the placing of the drain is best determined by the surgeon as befits the individual case. However, the peritoneum and the fascia must be sutured snugly around the drain and the drain itself is held in place by a suture (silk or wire) through the skin between the two limbs of the drain. In addition, strips of adhesive tape from the splints on the limbs are made fast to the adhesive tape of the dressing. The tubes can be sterilized by pressure sterilizers and re-used as often as desired, but they should be checked carefully for débris and patency of the perforations before autoclaving.

Results.—The results have been gratifying, even though the number of cases is limited. After two years of experience, there have been no wound infections up to the time of writing. There has been only 1 hernia (ventral), which was in no way attributable to the drain but was due primarily to tissue digestion in a case of acute necrotizing pancreatitis with hemo-

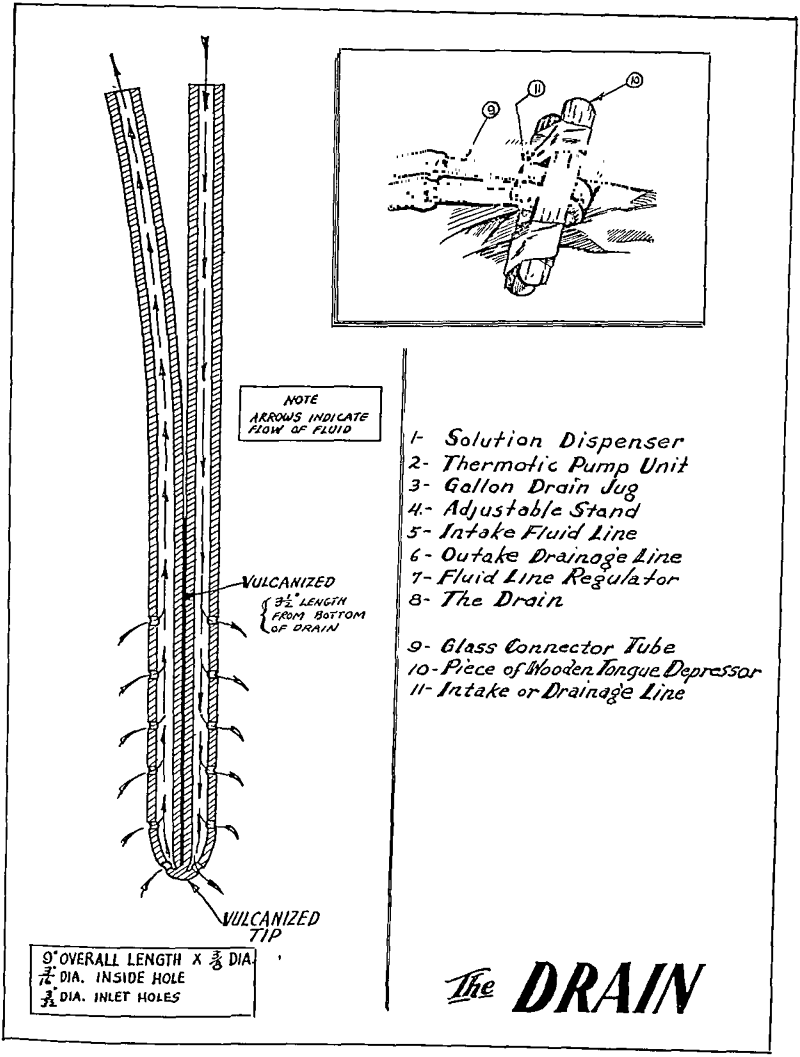

Fig. 1.—Diagrammatic representation of drain.

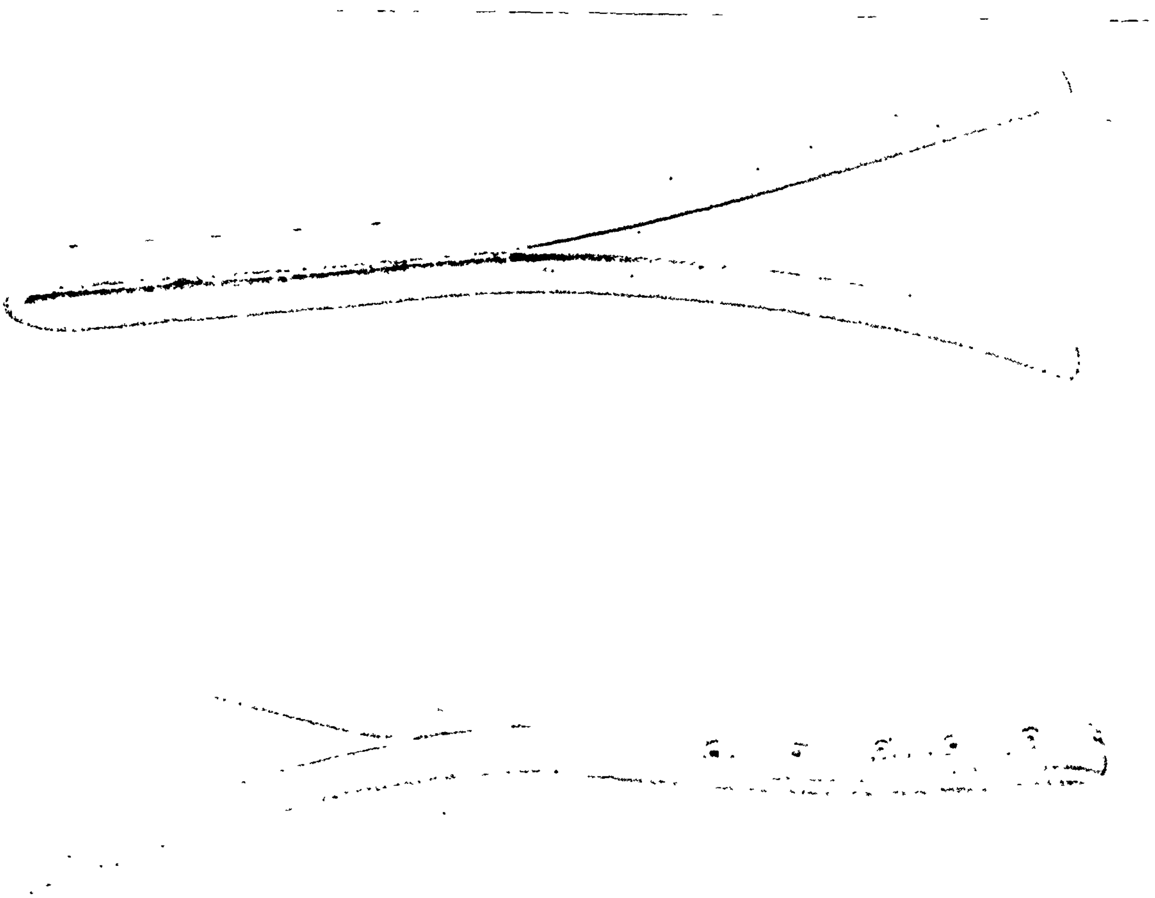

Fig. 2.—Photographs of drain (actual length, 9 inches).

purulent peritonitis. A diagnosis of perforated ulcer was made, as the patient had been under treatment for some time for a chronic gastric ulcer before being referred for surgical treatment. It was only postoperatively that we learned that the patient's gastrointestinal symptoms followed an accident a year earlier, when he was struck in the abdomen by a steering wheel. In this case a drain was placed through the gastrohepatic ligament into the defect caused by a biopsy in a pancreatic mass that extended upward into the diaphram. The gastrohepatic ligament and the skin were sutured between the arms of the drain as has been described. At the time this was done, a digestion of the tissue had already begun, owing to the action of the pancreatic enzymes. It is our opinion that insertion of the drain, with irrigation, caused dilution of the enzymes, and that the positive suction helped to remove considerable amounts of these enzymes quickly, before they could attack the tissues. When the patient left the hospital four weeks later he had an incisional hernia, but he might well have lost his life.

The following list will show the wide variety of conditions in which the drain was used, including those associated with varying degrees of infection. In addition to the case of acute necrotizing pancreatitis, which we have just discussed, there were:

23 cases of visibly ruptured appendix with appendical abscesses or general peritonitis

2 cases of fecal contamination of the peritoneal cavity caused by a blowout

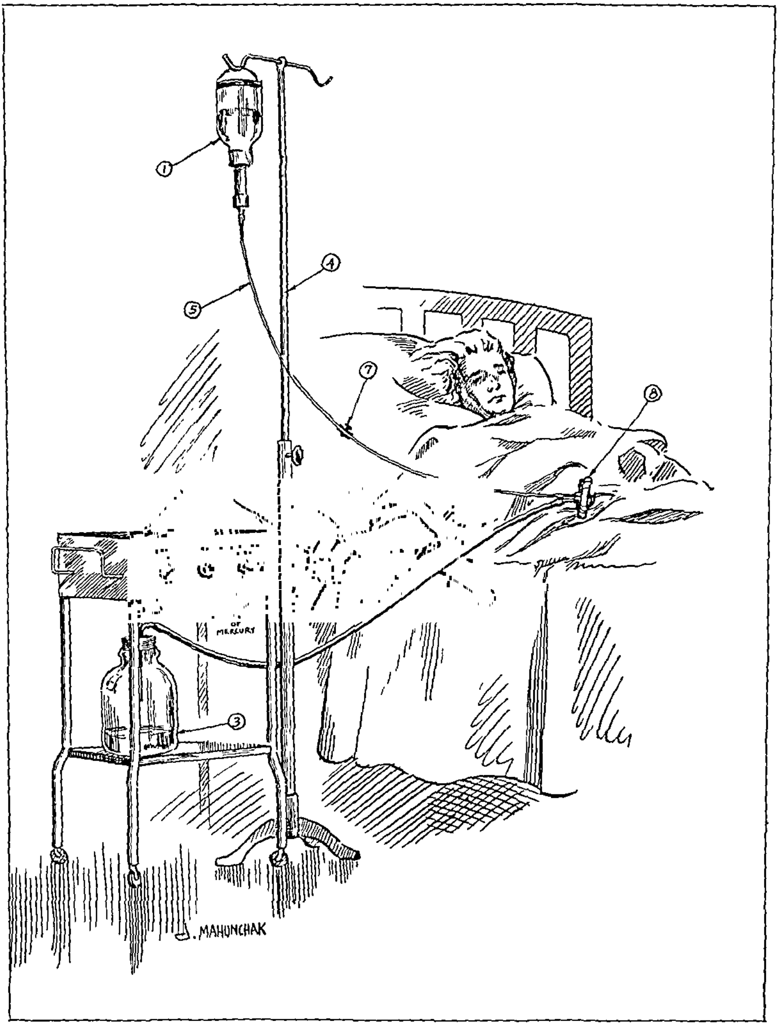

Fig. 3.—Drain in use. Key numbers are explained in Figure 1.

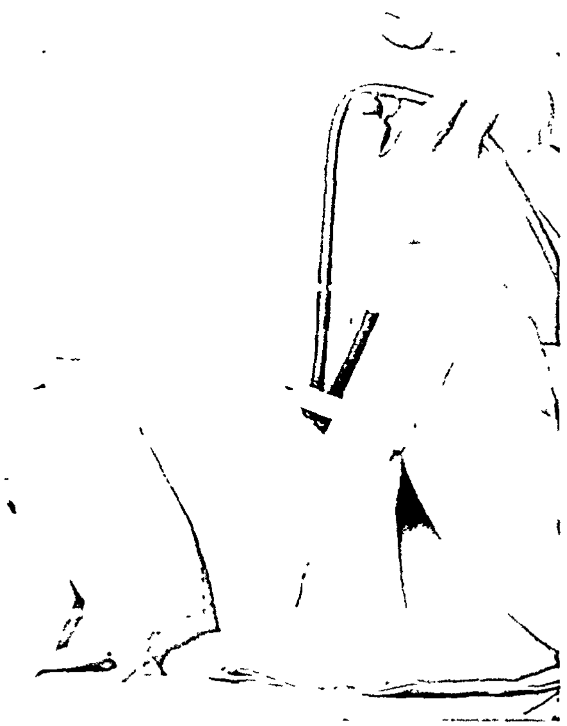

Fig. 4.—Patient with general peritonitis. Drain in function, together with continuous intravenous drip and decompression of bowel.

at the site of a carcinoma of the large bowel

3 cases of ruptured gallbladder

1 case of large abscess due to a ruptured diverticulum

4 cases of postappendectomy complications in which the stump blew out, with resultant hemopurulent fecal peritonitis

3 cases of ruptured tubo-ovarian abscess

1 case of traumatic rupture of the intestine (the bowel was completely severed)

1 case in which we had occasion to use the drain for an appendical abscess and six months later to use it again for an abscess caused by soiling at the site of a spontaneous cholecystocolic fistula. Since we had used the drain at the time of the first operation, we took particular note of the condition of the abdominal cavity when we opened it the second time. We are happy to report the presence of a negligible number of adhesions.

All the aforementioned patients received antibiotics: penicillin, aureomycin, chloromycetin or terramycin, together with continuous intravenous feedings and transfusions. Various vitamins, such as B, C and K, and last but not least, decompression, were employed when indicated.

We believe that satisfactory results could be obtained by using this drain in the treatment of other conditions:

Drainage of the chest in thoracic surgery
Perinephritic abscesses
Subdiaphragmatic abscesses
Any accessible empyema
Radical mastectomies
Peritonitis following Caesarean sections

SUMMARY AND CONCLUSIONS

A modified method of drainage, in which the principles of irrigation and positive suction are employed, is presented. We readily admit that the method is far from perfect, but it has served us well to date. We have had no deaths. The hospital stay has been prolonged only a few days longer than that of noninfected patients. The hospital convalescence in no case was stormy. There were no infected wounds. There was only 1 hernia, a ventral one, not attributable to the method of drainage. We have demonstrated the use of this drain in a wide variety of cases in which there was considerable variation in the degree of infection.

In conclusion, therefore, we feel that even though the actual number of cases has been comparatively small, the satisfying results indicate that this method deserves further and continued use in the handling of similar cases.

RÉSUMÉ ET CONCLUSIONS

On y discute un procédé simple de drainage où l'on se sert des principes de l'irrigation continue et de la succion positive. Même si la méthode n'est pas parfaite, elle a rendu de bons services

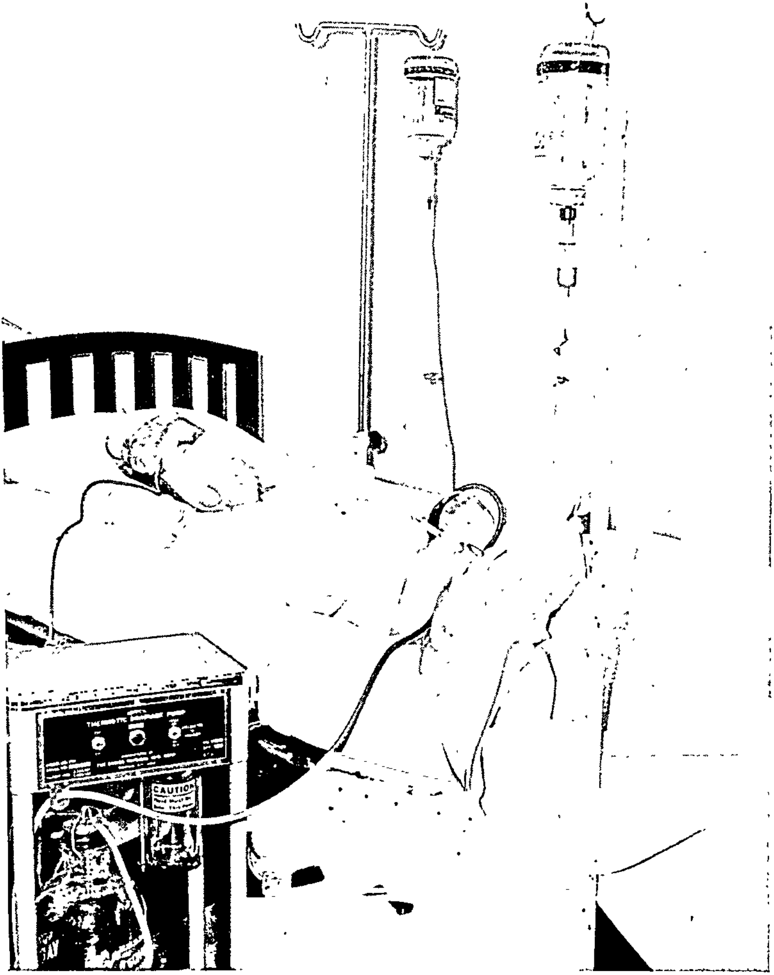

Fig. 5.—Drain in use in a case of general peritonitis complicating ruptured gangrenous appendicitis.

jusqu'à présent. Il n'y eût aucune mortalité et le séjour hospitalier presque comparable à celui des cas non infectés. Sans épisode orageux, sans infection, avec une seule hernie ventrale. Une discussion impartiale du cas semble exonérer la méthode. La méthode est employée dans une grande variètè de cas infectés. Même si le nombre de malades traités est encore peu considérable, le procédé est satisfaisant et doit être encouragé.

RESUMEN Y CONCLUSIONES

Se discute un método de canalización modificado, en que han sido usados los principios de irrigación y succión positiva. Se admite desde luego que el método dista de ser perfecto, aun cuando ha sido de utilidad hasta ahora. No ha habido decesos. Permanencia en el hospital prolongada sólo unos cuantos días en casos no infectados. Convalescencia sin trastornos. Ninguna herida infectada. Hubo hernia ventral en un solo caso, que se estima no puede atribuirse al método de canalización. Se considera haberse demostrado el uso de esta canalización en amplia variedad de casos, en los que hubo variación considerable en el grado de infección.

Se concluye que, aun cuando el número actual de casos es comparativamente pequeño, los resultados satisfactorios indican que el uso de este método es prometedor en dichos tipos de casos.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

Es wird eine modifizierte Form der Drainierung eroertert, bei der die Prinzipien der Irrigation und der positiven Ansaugung zur Anwendung gelangen. Wenn auch die Methode, wie gern zugegeben wird, noch keineswegs perfekt ist, so hat sie doch bisher gute Dienste geleistet. Todesfaelle sind nicht vorgekommen. Der Krankenhausaufenthalt dauerte nur wenige Tage laenger als bei nichtinfizierten Faellen. Der Heilungsverlauf im Krankenhaus war in keinem Fall ein stuermischer. Infektion von Wunden kam nicht vor. Nur eine einzige Hernie, ein Bauchwandbruch, kam zur Beobachtung. Die Diskussion dieses Falles ergab, dass er nicht auf die Methode der Drainierung zurueckgefuerht werden kann. Das Verfahren ist an einer Reihe von sehr verschiedenartigen Faellen, die betraechtliche Unterschiede im Grade der Infektion aufwiesen, angewandt worden.

Es wird geschlossen, dass die befriedigenden Resultate, wenn auch das Krankenmaterial verhaeltnismaessig gering war, zur weiteren Anwendung in der Behandlung solcher Faelle berechtigen.

RIASSUNTO E CONCLUSIONI

Viene discusso un nuovo metodo di drenaggio in cui sono impiegati i principi di irrigazione e di aspirazione. Il metodo é ben lungi dall'essere perfetto, per quanto fino a questo momento abbia servito egregiamente. Noi non abbiamo avuto decessi. L'ospitalizzazione é stata soltanto di pochi giorni più lunga di quella dei casi non infetti. La convalescenza non é stata burrascosa in alcun caso. Non ci sono stati casi di infezione della ferita. C'é stata soltanto un'ernia ventrale, ma la disamina di questo caso rivela che che esso alla rigore non va attribuito al metodo di drenaggio. Noi abbiamo dimostrato l'uso di questo drenaggio in un'ampia varietà di casi che presentavano una considerevole gamma di gradi d'infezione.

Perciò in conclusione, noi riteniamo che, per quanto il numero dei casi sia stato relativamente limitato, i soddisfacenti risultati indicano che il metodo merita ulteriore e continuo uso nel trattamento dei casi di questo genere.

SUMÁRIO E CONCLUSÕES

Um método modificado de drenagem é discutido, no qual os principios de irrigação e de sucção positiva foram usados. E' facilmente admitido que o método está longe de ser perfeito, ainda que tenha sido de grande utilidade para os autôres até

o presente. Não se registraram mortes. A estadia no hospital se prolongou somente uns poucos dias mais do que nos casos não infetados. A convalescença hospitalar em nenhum caso foi tempestuósa. Não houve feridas infetadas. Houve somente uma hernia do tipo ventral. A discussão deste caso indicou que ela não póde ser verdadeiramente atribuida ao método de drenagem. Os autôres demonstraram o uso dessa drenagem numa larga variedade de casos, apresentando consideravel variação no grau da infeção.

Concluindo, os autôres acreditam que o atual numero de casos tem sido comparativamente pequeno, os resultados satisfatórios indicando que este método merece ulterior e continuado uso no manuseio desse tipo de casos.

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Echoes of the Past

XII. SPECIALISTS IN ANCIENT ROME

The knowledge that medical specialists existed in ancient Rome is gleaned from the literature of such great classic writers as Cicero and Martial. Cicero *wrote of specialists in internal diseases, wounds and eye diseases.* Other types of *specialists are described by him. Some* physicians achieved fame *as specialists.* The great ophthalmologist, Demosthenes, practiced in the reign of Nero. His work was admired greatly by Pope Sylvester II (999-1055) and was still in existence during the fourteenth century.

Martial (45-102 A. D.) satirized the overspecialization of the day: "Cascellus extracts or fills an aching tooth, Hyginus burns away disfiguring hairs; Fannius relieves, without cutting, the relaxed uvula; Eros effaces the degrading brand-marks from freedman's foreheads; Podaliruis is an expert in curing a hernia; but tell me, Gaelus, where is he that can help my harassed person?"

In his *De Medicina V*, Celsus gave advice to specialists which is still appropriate and deserving of quotation:

"Now the physician ought to be able to distinguish what are incurable, and what are easy of cure. For, in the first place, a wise man will not meddle with a patient whose recovery is impossible; nor take upon himself the odium of having killed one, whom his own destiny has carried off. And in the next place, when the case is very dangerous, although not completely hopeless, he will reasonably inform the patient's friends that the difficulty is considerable; lest in the event of the malady prevailing over art, he may appear to be ignorant, or to have practiced a *deception. But although this is a line of conduct worthy* of a prudent man, so on the other hand, to give undue importance to a trivial case, that one may seem to have accomplished wonders, is to play the part of a mountebank. It is but just that our acknowledgment of the simplicity of a case should act as a stimulus to *circumspection,* lest that which is trivial *become serious through the neglect of the* medical attendant."

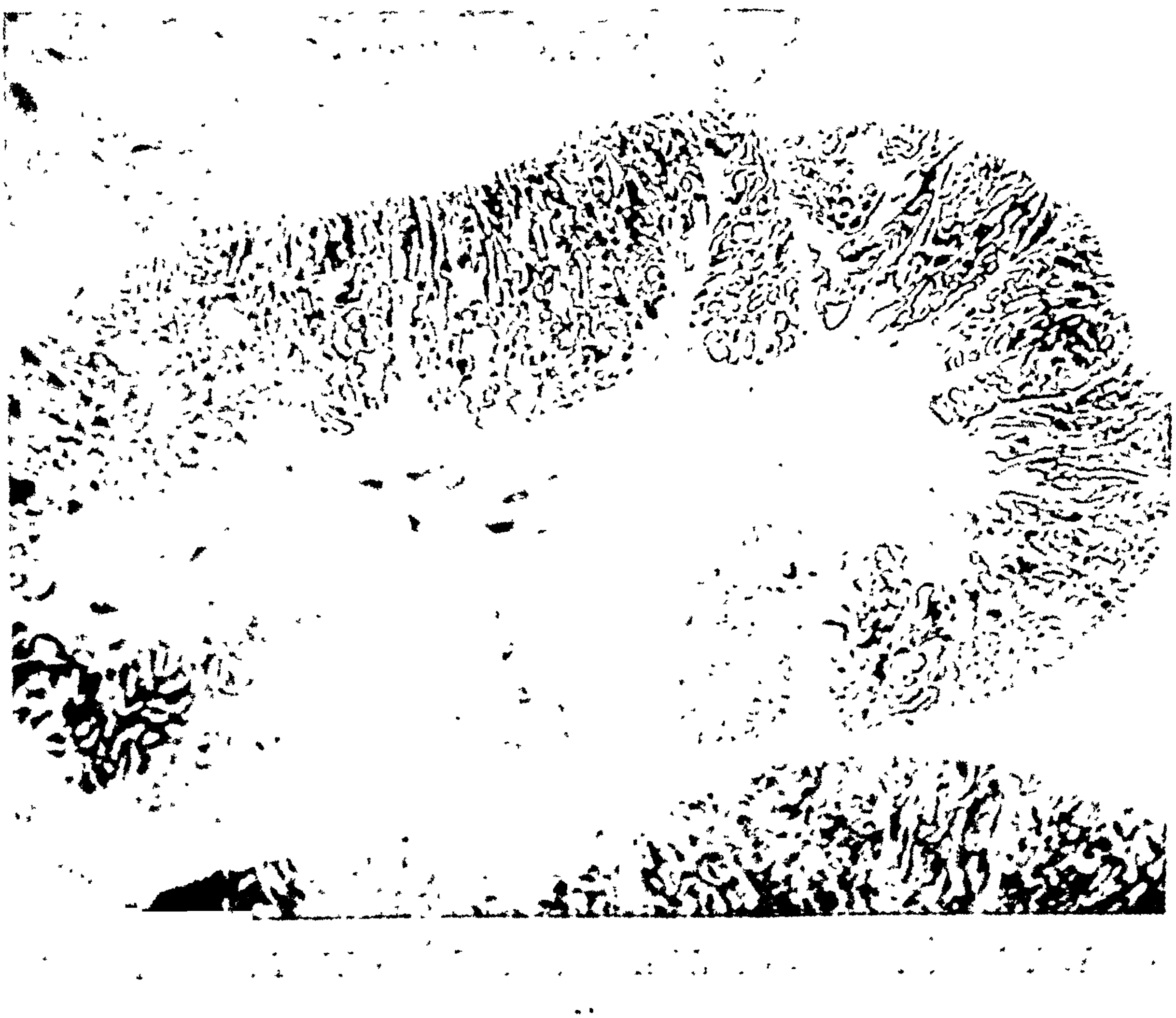
—*Bernard J. Ficarra, M.D., F.I.C.S.*

Case Report

Diffuse Gastric Polyposis

ALBIN J. SOWKA, M.D.* AND EDWARD H. WARSZEWSKI, M.D., F.A.C.S., F.I.C.S.**
CHICAGO

GASTRIC polyposis is still a confusing subject, although much has been written about it. No confusion has resulted, however, when only one such tumor existed in the stomach. It has been universally termed a polyp, sometimes described as adenomatous. Whenever more than two or three polyps have been found, further confusion in nomenclature has resulted. This confusion is primarily caused by the fact that more than one pathologic entity has been grouped to-



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* [illegible] Staff, St. Mary of Nazareth Hospital.

** [illegible] St. Mary of Nazareth Hospital, Chicago; [illegible] Department of Surgery, St. Mary of Nazareth [illegible]

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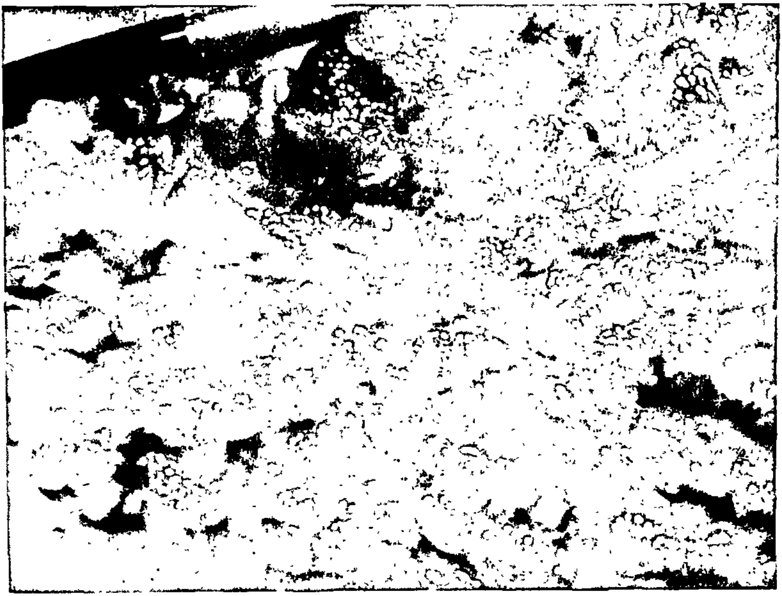

Fig. 2.—Gross appearance of mucosal surface of stomach, showing cerebrum-like convolutions of mucus-covered rugae.

gether under the same physically descriptive term, polyposis.

This condition has also been known as adenomatosis gastrica, papillomatosis gastrica, polyposis adenomatosis, and adenopapillomatosis. Brissaud was the first to classify it under the term polyadenoma, and Menetrier, in 1888, expanded this term to describe the two main types of polyps seen by him, namely polyadenoma polypeaux and polyadenoma *en nappe.*

The diffuse type of polyposis, which is the subject of this paper, is known as polyadenoma *en nappe* and is composed of closely placed folds of hypertrophic mucous membrane resembling the convolutions of the brain. The enlargement which forms the "polyp" is composed of a purely mucosal proliferation in which the epithelial and the fibrous components both play a part. The glands increase in height, remaining almost entirely in a straight line, and they reach unusual proportions of five or six times their normal length. The stroma of the mucosa is generally a little thickened and stretched out like the glands (Pearl and Brunn). The muscularis mucosa is always intact, and the submucosa makes no attempt to insinuate itself into the hyperplastic area.

Discrete polyps (polyadenoma polypeaux) are of a different description. Discrete polyps are usually soft, lobulated outgrowths with great variation in size. Some are pedunculated and some are broad at the base. Section shows the tumor to consist of a marked thickening

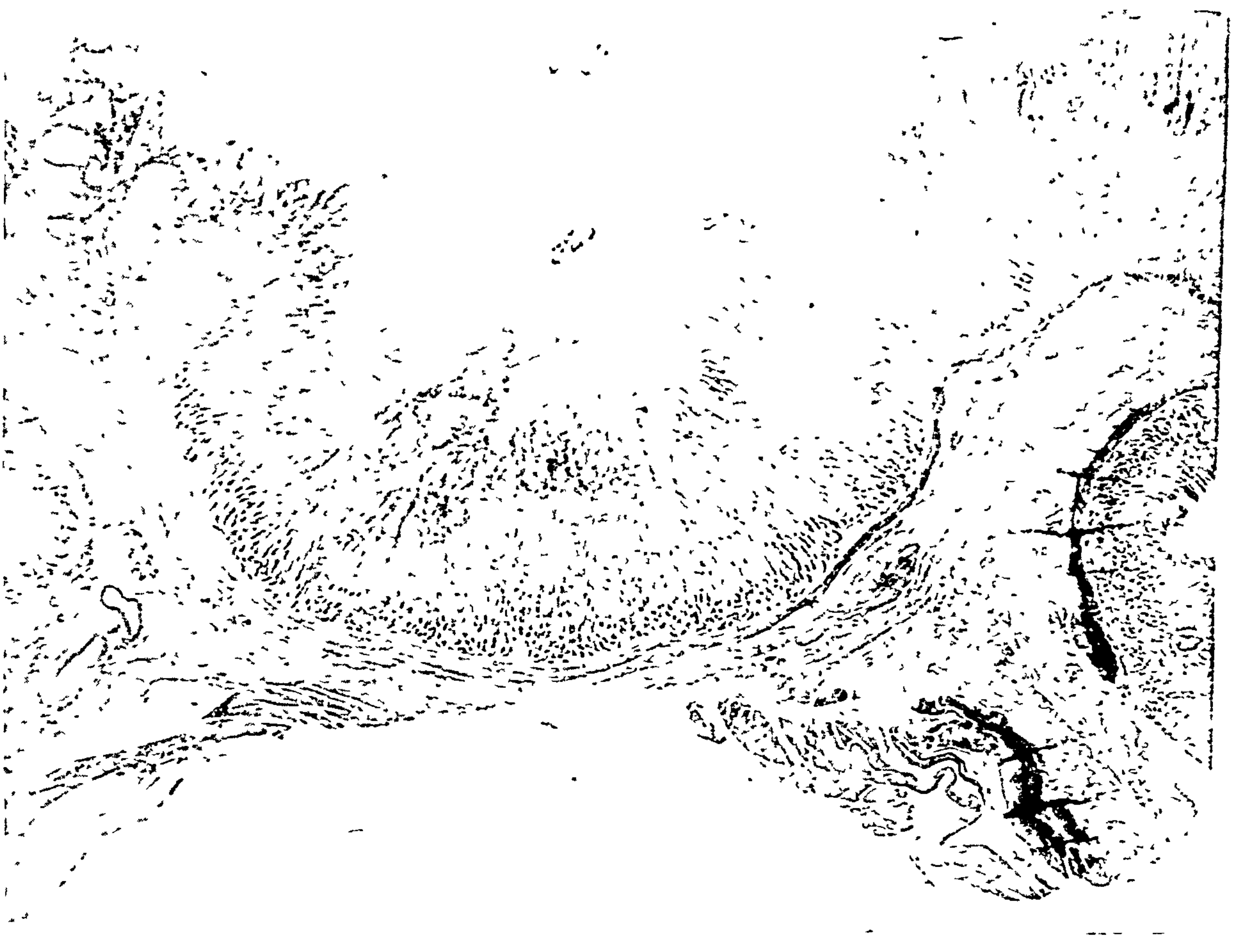

Fig. 3.—Microscopic appearance of diffuse gastric polyposis (× 5). Muscularis mucosa shown as intact layer separating hypertrophied mucosa from submucosal stalks.

of the mucosa with a cone of connective tissue pushing itself upward from the submucosa and splitting the muscularis mucosa before it.

Microscopic differentiation of these two polyps shows the diffuse type to possess relatively normal epithelial cells which multiply to form hypertrophied glands, whereas the discrete type has cells which often show premalignant changes. The cells of a discrete polyp often grow in a disorderly fashion, showing evidence of hyperchromia and, occasionally, mitoses (Fig. 1).

Gastric polyposis is an uncommon condition, only about 142 cases having been reported in medical literature. The reported autopsy incidence of this condition is 0.4 per cent. However, diffuse polyposis is by far the more rare of the two types, since only 9 of the cases reported can justifiably be considered of this type. Eusterman and Sentry believe this to be the rarest form of benign tumor of the stomach. In addition, the authors wish to present their own case of diffuse polyposis to add to the literature.

REPORT OF CASE

The patient, a slender white man aged 34, worked as a bank clerk. He was in good health until six months before admission to the hospital. At this time the patient noticed that he tired easily and that his appetite was poor. Soon he began to experience abdominal cramps which came on before, during and after meals as dull aching pain in the epigastrium. During some of these dull

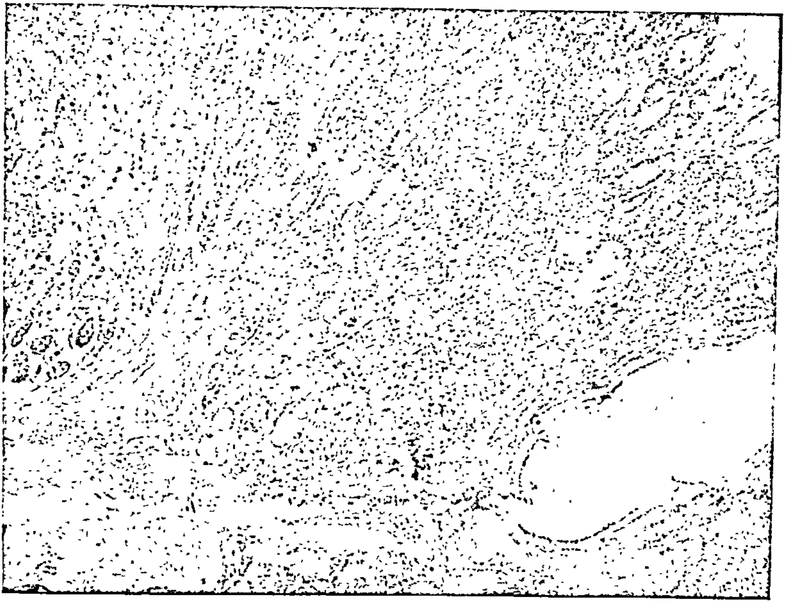

Fig. 4.—Higher magnification of a polyp, showing autolysis of cells, cystic dilatation of mucus-filled glands and edematous connective tissue (× 30).

cramping pains the patient vomited, and within a few months he had lost 20 pounds.

Physical examination revealed the patient to be well developed and poorly nourished. He also appeared to be chronically ill. His abdomen was scaphoid and presented a mild degree of tenderness over the epigastrium. No obvious masses were palpable.

Roentgenograms were taken which revealed a large filling defect involving the middle and distal portions of the stomach.

Gastric analysis revealed a low total acidity level and an no free acids. Coffee-ground blood was found in the gastric specimen.

A total gastrectomy was performed with a jejunoesophageal anastomosis after a gastrotomy had been done to evaluate the lesion. The patient was given multiple blood transfusions, intravenous fluids, tube feedings and then a graduated diet of soft foods. The soft frequent feedings were high in protein and low in fat and were supplemented with capsules containing liver and powdered stomach extract.

The pathologic report (Eric Thurston, M.D.) was as follows: "The gross specimen consisted of the stomach and a portion of the duodenum measuring 22 cm. along the lesser curvature and weighing about 1,800 Gm. empty. The open stomach showed the rugae thrown up into thick heavy folds measuring as much as 1.5 cm. in width and 1 cm. in thickness, with the mucosa involved from the esophagus to the pylorus. The mucosal surface was congested and covered with thick, slimy mucus" (Fig. 2). "The regional lymph nodes were greatly enlarged and were light grey."

The microscopic report was as follows: "Blocks removed from various areas of the stomach showed the mucosa to have been thrown into folds of extreme thic a polypoid arrangement. These polyps have a broad base and stalk, but the bulk of the polyp is formed from the hypertrophied mucosa" (Fig. 3). "While considerable autolysis of the chief and parietal cells was presented, there was also an apparent increase in the number of mucous neck cells in certain areas. In other areas there was a cystic dilatation of the mucous-filled gastric glands. Fine connective tissue strands separated the glands of the polyp, thereby giving a fan-shaped appearance. There was no evidence of inflammatory cells in the connective tissue of the mucosa. The muscularis mucosa followed the base of the mucosa into the polyp, but remained intact throughout. The submucosal connective tissue was considerably increased and appeared edematous, but there was no indication of inflammatory cell infiltration. The muscularis propria was somewhat thinner than normal, thus reflecting the amount of dilation present" (Fig. 4).

The diagnotic report was "diffuse polyposis adenomatosis (*en nappe*)."

SUMMARY

A rare case of diffuse gastric polyposis has been presented, and an attempt has been made to differentiate this type from the more common discrete gastric polypi. Pathologic criteria for differentiation have been discussed and illustrations given.

RESUMEN

Se comunica un caso raro de poliposis gástrica difusa, tratando de diferenciar este tipo de la forma gástrica discreta más común. Se discute el criterio patológico de diferenciación y se ilustra el caso.

ZUSAMMENFASSUNG

Die Verfasser berichten einen seltenen Fall von diffuser Magenpolyposis und versuchen, diese Form von den haeufiger vorkommenden umschriebenen Magenpolypen zu differenzieren. Die pathologischen Kriterien der Unterscheidung werden eroertert. Die Arbeit ist mit Abbildungen ausgestattet.

RÉSUMÉ

On rapporte un cas rare de polypose vésicale. On a tenté de faire une différenciation anatomo-pathologique entre cette maladie et le polype solitaire de l'estomac. Illustrations à l'appui.

RIASSUNTO

E' riportato un raro caso di poliposi gastrica diffusa. Si cerca di differenziare questo tipo dal più comune di polipi gastrici discreti. Sono discussi i criteri di differenziazione anatomopatologica e sono presentate illustrazioni.

SUMÁRIO

Um raro caso de polipóse gastrica é relatado, em uma tentativa de diferenciar este tipo do polipo gastrico discréto e comum. Criterios de diferenciação patológica são discutidos e ilustrações são apresentadas.

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Editorial

The Paris Orthopedic Clinics

DURING the recent visit to Paris of the American and English delegations in conjunction with the meeting of the Italian Chapter of the International College of Surgeons, May 3 and 4, several highly interesting operative clinics were held by outstanding French surgeons. Although these men were all general surgeons and not limited to orthopedics, the general quality of their orthopedic work was of the highest caliber, and all demonstrated unusual operative skill and dexterity. One was particularly impressed with the rapidity of their operative technic, which appeared to be attained by minimal ligation of small bleeders, keen knowledge of surgical anatomy, preconceived operative plans, elimination of repeated maneuvers, and rapid closure of the wound with the use of awl-like needle threaders instead of the conventional surgical needles and needle holders. Although wound closures were not as anatomic as they generally are in the United States, apparently there have been no unfavorable sequelae.

Dr. Judet demonstrated his acrylic head hip arthroplasty operation in a case of malum coxae senilis. The patient was a heavy white man aged 52 who had been suffering with hip pain for four and one-half years, with lesser involvement of the opposite hip and the sacroiliac joints. Dr. Judet removed an extremely large femoral head and replaced it with an acrylic prosthesis in twenty-five minutes. The two doctors Judet (brothers) have performed 500 acrylic femoral head operations, with excellent results in 85 per cent. The poor results, manifested by pain and limited motion of the hip, have occurred principally in cases of Marie-Strumpell arthritis and polyarthritis; the best results were obtained in cases of nonunion of fractures of the femoral neck, no failures having been observed in follow-up periods up to three years. Dr. Judet is now selecting certain fresh fractures of the femoral neck, especially subcapital fractures, for this type of operation.

Dr. Judet uses an anterior approach, a 6-inch (15 cm.) vertical incision centering over the anterior iliac spine, reflecting the sartorius and rectus femoris medially without stripping or sectioning. In his opinion there is less muscle damage with this type of reflection than with sectioning. He attributes some former postoperative difficulties to surgical muscle damage. (Other surgeons reflect these muscles laterally.) He carefully preserves the lateral femoral cutaneous nerve, as injury to this nerve has resulted in 5 cases of troublesome meralgia paresthetica. After cutting and tying the transverse circumflex femoral artery and vein he excises portions of the hip joint capsule (former attempts at preservation have been discarded), and removes the head with an osteotomy of the neck and a corkscrew device. Care is taken to preserve the femoral neck, especially in the presence of a mushroom-type deformity of the head. The acetabulum is not reamed unless reaming is mechanically required for greater depth. The femoral neck is trimmed with an osteotome and then reamed with a hand device, after which the corkscrew instrument is pushed through the neck to emerge from the cortex below the greater trochanter. After the neck has been smoothed with the reamer—this process also informs him of the size of prosthesis required—Dr. Judet inserts an acrylic head from above downward, so that the point barely penetrates the lateral femoral cortex.

Wound closure is performed with 3 or 4 wire sutures in the deep fascia and 3 or 4 silk sutures in the skin, plus skin clips. A short inversion boot cast is applied for eight days to maintain the prosthesis within the acetabulum. Walking is generally commenced in twelve to fifteen days, after use of a rather simple suspension apparatus for passive motion in bed. A hip spica cast is used only after operation for subluxation. It is removed in fifteen days and walking begun in three weeks.

Dr. Judet also performed a bone graft for nonunion of a fracture of the femoral shaft, using fetal calf bone from his bone bank at Hospital St. Louis. He believes that a more sterile preparation is secured by killing the pregnant cow and has encountered no complications from this source of supply, which he uses extensively.

His final operation consisted of a wide sequestrectomy and débridement for osteomyelitis of the tibia, followed by partial osteotomy and collapse of the remnant of tibial cortex into the cavity so produced, allowing easier closure of the remaining skin but narrowing the leg. Tubes were inserted for later instillation of penicillin solution into the depths of the wound.

Professor Sicard at Hospital Beaujon had quite a varied schedule which he completed in two and one-half hours, using two operating rooms. A laminectomy for a herniated intervertebral lumbar disc was performed without benefit of myelogram, which he does not usually employ, exploring both the fourth and fifth lumbar and the lumbosacral interspaces. A partial laminectomy was done with ordinary bone rongeurs instead of the Kerrison type generally used in the United States. Only the extruded portion of the disc was removed, and the disc space itself was not curetted.

After performing an acrylic head arthroplasty of the hip for a recent subcapital fracture of the femoral neck (in seventeen minutes), he demonstrated a new acrylic prosthesis of his own design which he utilized in arthrodesing the lumbosacral portion of the spine for a missed fracture of the pars articularis (neural arch). The prosthesis is a rectangular device which fits over the spinous process of the fifth lumbar vertebra and is held in place by acrylic cross pins which penetrate holes drilled through the base of the spinous processes. Professor Sicard has not yet released this device, as it is still in the trial stage, but he has had excellent results without the postoperative use of a brace or a plaster cast. Patients are able to walk within a few days because of the firm immobilization secured with the prosthetic device.

The last operation consisted of an Albee type of bone graft 10 inches (25 cm.) long, from a bone bank fibula (postmortem source), placed in the dorsolumbar portion of the spine for Pott's disease of long standing. No attempt was made to arthrodese the zygo-apophysial joints or to prepare a bed of bone chips on the lamina, the graft merely being laid in place and the soft tissues closed over it. A previously prepared plaster jacket was used for postoperative immobilization.

Extreme cordiality and sincere efforts to demonstrate surgical technic were manifest in all of the clinics. The unanimous impression was that our French colleagues have made wonderful progress in the advancement of surgical technic in orthopedic surgery.

—*Everett J. Gordon, M.D., F.A.C.S., F.I.C.S.*

Genius believes its faintest presentiment against the testimony of all history, for it knows that facts are not ultimates, but that a state of mind is the ancestor of everything.

—*Emerson*

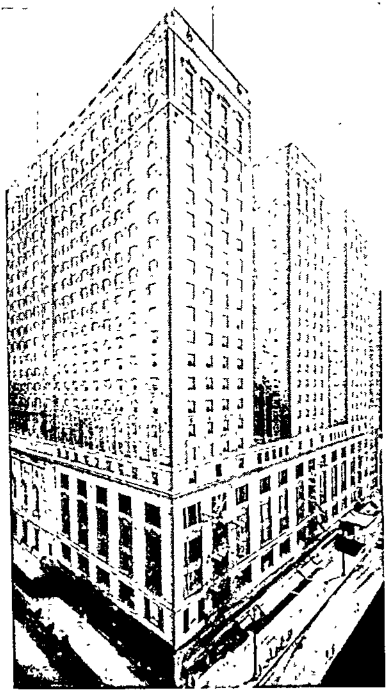
Chapter News

International College of Surgeons

United States and Canadian Chapters

Arnold S. Jackson, M.D., F.A.C.S., F.I.C.S., Secretary

Chicago Assembly: As the time draws near for the Sixteenth Annual Assembly of the United States Chapter, International College of Surgeons, prospect looks bright for a record attendance and a memorable occasion. The program will be found on Page 249 of this issue. Pertinent information is repeated below for the convenience of members and guests:



The Palmer House, Chicago.

Committees: The following Committees are responsible for the various departments of Assembly procedure:

Arrangements

Chairman of the Assembly
Raymond W. McNealy, M.D., F.A.C.S., F.I.C.S., Chicago
Co-Chairmen
Karl A. Meyer, M.D., F.A.C.S., F.I.C.S., Chicago
Max Thorek, M.D., LL.D., D.Sc., F.I.C.S., F.B.C.S., Chicago

Banquet

Chester W. Trowbridge, M.D., F.A.C.S., F.I.C.S., Chicago

Convocation

Chairmen
Harry A. Oberhelman, M.D., F.A.C.S., F.I.C.S., Chicago
Clement L. Martin, M.D., F.A.C.S., F.I.C.S., Chicago

Ernest F. Purcell, M.D., F.I.C.S., Trenton, New Jersey
Francis D. Wolfe, M.D., F.A.C.S., F.I.C.S., Chicago
Claire E. Carr, M.D., F.A.C.S., F.I.C.S., Chicago
Horace F. Turner, M. D., F.A.C.S., F.I.C.S., Chicago
Louis F. Plzak, M.D., F.A.C.S., F.I.C.S., Berwyn, Illinois
Walter C. Burket, M.D., F.I.C.S., Evanston, Illinois

Motion Picture Program

Philip Thorek, M.D., F.A.C.S., F.I.C.S., Chicago

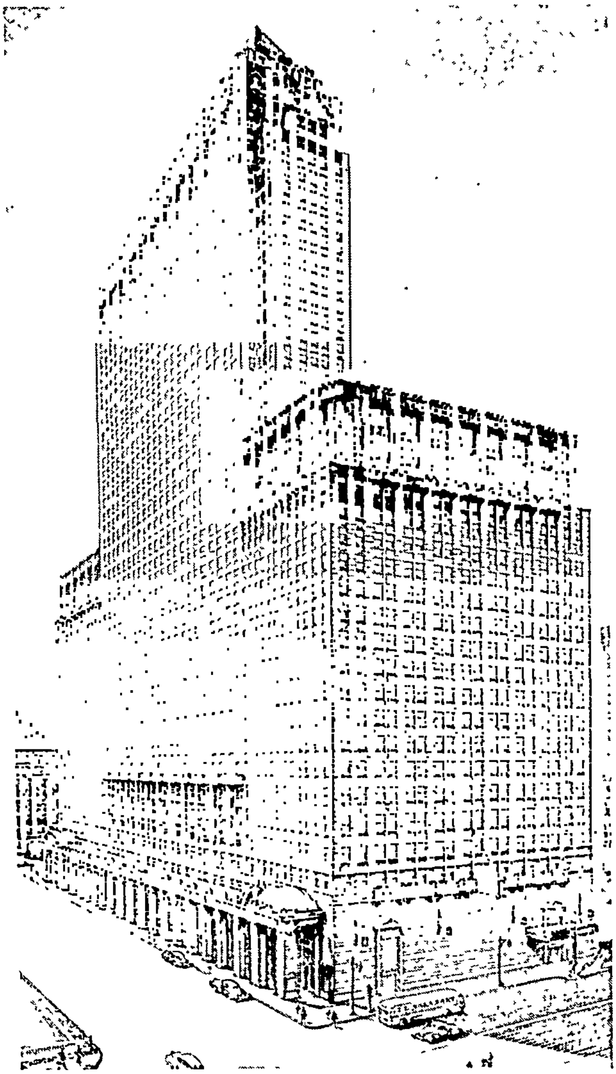
General Program

Arnold S. Jackson, M.D., F.A.C.S., F.I.C.S., *Chairman*, Madison, Wisconsin

Motion Picture Program: Dr. Philip Thorek, in charge of the Motion Picture Program, announces that a program has been arranged which will appeal to surgeons and specialists alike.

Although technic is the point of greatest focus, emphasis is placed upon the newer type of film which presents the subject in its entirety.

The scope of the program includes the most recent surgical films pertaining to orthopedics, proctology, gynecology, the heart, the esoph-



Chicago Civic Opera House.

agointestinal tract, ophthalmology, the thorax, the nervous system, the biliary passages, the genitourinary system, the thyroid gland, the cardiovascular diseases, et cetera.

A Film Forum also is to be presented in which five surgical films will be shown, with the surgeon present to discuss his film.

The Motion Picture Program appears in this issue, Page 258.

Banquet: The Annual Banquet will be held in the Grand Ballroom of the Palmer House at 7:30 p.m. on the evening of Wednesday, September 12. The banquet speaker will be Mr. A. Lawrence Abel of London, whose topic will be "What Is Happening in Britain—Fact and Fiction." Mr. Abel is a Fellow of the Royal College of Surgeons of England and a member of its Council; Senior Surgeon at the Princess Beatrice Hospital and the Gordon Hospital for Rectal and Gastroenterological Diseases; Surgeon to the Royal Cancer Hospital; President of the Metropolitan Counties Branch of the British Medical Association and Council Member of that organization; Honorary Fellow of the American Medical Association, the American Proctologic Society and the International College of Surgeons.

Convocation: The Convocation ceremonies, with induction of new members of the United States Chapter of the College, will be held at the Civic Opera House on Thursday evening, September 13. The Honorable Estes Kefauver, United States Senator from Tennessee, will give the Convocation Address. His subject is "The America of Tomorrow."

Assembly Information: The following points are important:

Hotel Reservations: See inside front cover.

Registration, Sunday 2:00 p.m. through Thursday, 3:00 p.m., September 9-13, Palmer House, Chicago.

Advance registration (on Sunday) will save time.

Admission by badge only to all scientific Assemblies, section meetings, and to the exhibits. Present your I. C. of S. membership card to expedite registration. Registration fee, $5.00.

Bona fide doctors of medicine serving as residents and interns, if vouched for by written card or letter by the superintendent of their hospital or by an officer of the College, will be registered as guests. Please present credentials at Registration Desk.

One hundred thirty-seven scientific and technical exhibits will open daily at 8:30 a.m. and close at 5:30 p.m. Frequent intermissions to view the exhibits have been arranged before, during and after the assemblies.

Motion picture programs, incorporating modern surgical technics will be presented in the Scientific Exhibit Hall by Davis & Geck, Inc., Brooklyn, N. Y. The films will show continuously on Monday, Tuesday, Wednesday, Thursday, September 10-13, from 10:00 a.m. to 4:30 p.m.

For copy of Final Program, write the Secretary, Dr. Arnold S. Jackson, F.A.C.S., F.I.C.S., 1516 Lake Shore Drive, Chicago, Ill.

Program

Sixteenth Annual Assembly

United States Chapter

INTERNATIONAL COLLEGE OF SURGEONS

Grand Ballroom, Palmer House

Monday, September 10, 1951

MORNING SESSION

Presiding: W. Wayne Babcock, M.D., LL.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylania

Secretary: Kenneth Sawyer, M.D., F.A.C.S., F.I.C.S., Denver, Colorado

Symposium on Surgery of the Colon

A.M.

9:00- 9:20 Glassman, Jacob A., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Associate Clinical Professor, Surgery, Cook County Graduate School of Medicine. Associate Attending Surgeon, Cook County Hospital.
"Some Practical Anatomical Considerations in Colon Surgery"

9:20- 9:40 Popper, Hans, M.D., Ph.D. Chicago, Illinois
Director, Department of Pathology, Cook County Hospital, Scientific Director, Hektoen Institute for Medical Research, Associate Professor, Pathology, Northwestern University Medical School.
"Newer Aspects of the Pathology of the Colon"

9:40-10:00 Case, James T., M.D., D.M.R.E., F.A.C.S., F.I.C.S., Chicago, Illinois
Professor Emeritus of Radiology, Northwestern University Medical School, Radiologist, Highland Park Hospital Consultant to U. S. Public Health Service and Passavant Memorial Hospital; Consultant in Surgery, Battle Creek Sanitarium.
"The Roentgenologic Findings in Carcinoma of the Colon"

10:00-10:40 Intermission to View Exhibits

10:40-11:00 Portis, Sidney A., M.D., F.A.C.P. Chicago, Illinois
Associate Clinical Professor of Medicine, University of Illinois (Rush), Medical Chief of Psychosomatic Group, Michael Reese Hospital.
and
Lawrence, Charles H., M.D. Chicago, Illinois
Clinical Assistant in Medicine, Northwestern University Medical School.
"The Early Diagnosis of Carcinoma of the Colon"

11:00-11:20 McNealy, Raymond W., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Professor of Surgery, Cook County Graduate School of Medicine, Associate Professor of Surgery, Northwestern University Medical School, Chief Surgeon, Wesley Memorial Hospital.
"Surgery of the Right Colon"

11:20-11:40 Rosi, Peter A., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Associate Professor of Surgery, Northwestern University Medical School; Attending Surgeon, Wesley and Cook County Hospitals.
"Surgical Treatment of Carcinoma of the Left Colon and Rectum"

11:40-12:00 Wolfe, Francis D., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Instructor in Surgery, Northwestern University Medical School; Attending Surgeon, Wesley Memorial Hospital.
"Diverticulitis of the Colon"

AFTERNOON SESSION

Presiding: W. R. Lovelace, M.D., F.I.C.S., D.I.B.S., Albuquerque, New Mexico

Secretary: H. H. Sharp, M.D., A.I.C.S., Downington, Pennsylvania

P.M.

2:00- 2:20 Starry, Leo J., M.D., F.A.C.S., F.I.C.S., *Oklahoma City, Oklahoma*
Professor of Clinical Surgery and Director of Surgical Clinics, University of Oklahoma School of Medicine; Attending Surgeon, University Hospital and Oklahoma Hospital for Crippled Children, Chief of Staff, St. Anthony Hospital.
and
Dodson, Harrell, M.D. Oklahoma City, Oklahoma
"Carcinoma of the Stomach"

2:20- 2:40 Peterson, Frank R., M.D., F.A.C.S. Cedar Rapids, Iowa
Former Professor and Head of Department of Surgery, University of Iowa College of Medicine.
"Morbidity due to Incomplete Cholecystectomy"

2:40- 3:00 Bacon, Harry E., M.D., F.A.C.S., F.A.P.S., F.I.C.S., F.R.S.M. Philadelphia, Pennsylvania
Professor and Head, Department of Proctology, Temple University Medical School; Head, Department of Proctology, St. Mary's Hospital.
and
McCrea, Lowrain E., M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
and
Trimpi, Howard D., M.D. Philadelphia Pennsylvania
"Pelvic Exenteration for Rectal Carcinoma with Cutaneous Ureterostomy"

3:00- 3:20 Nordland, Martin, M.D., F.A.C.S. Minneapolis, Minnesota
Associate Clinical Professor, Surgery, University of Minnesota Medical School, Surgical Consultant, Glen Lake Sanatorium, Surgeon, Northwestern Hospital, Minneapolis.
"Retroperitoneal Tumors"

3:20- 3:40 White, Charles S., M.D., Sc.D., F.A.C.S., F.I.C.S. Washington, D. C.
Chief Department of Surgery, Doctors Hospital.
and
Stubbs, Donald, M.D. Washington, D. C.

"Intra-Arterial Transfusions in the Treatment of Massive Gastroduodenal Hemorrhage"

3:40- 4:10 **Intermission to View Exhibits**

4:10- 4:30 McGregor, Douglas U., M.D., C.M., F.I.C.S., Hamilton, Canada.
Consulting Surgeon, St. Joseph's and Mountain Hospitals; Honorary Surgical Consultant, Hamilton General Hospital.
"Terminal Ileum Duplex"

4:30- 4:50 Harper, Fred R., M.D., F.A.C.S.
Denver, Colorado
Associate Professor of Surgery and Head of Department of Thoracic Surgery, University of Colorado School of Medicine.
"An Outline for the Treatment of Thoracic Injuries"

EVENING SESSION

P.M.
5:30 **Business meeting and dinner, Canadian Chapter of International College of Surgeons**
Film Forum: Scientific Motion Picture Program, with authors of film shown present for discussion.
Dr. Philip Thorek, Chicago, *Chairman*

Tuesday, September 11

MORNING SESSION

Presiding: Moses Behrend, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
Secretary: George Ferre, M.D., F.I.C.S. Miami Beach, Florida

A.M.
9:00-10:30 **PANEL DISCUSSION: "The Acute Surgical Abdomen"**
Jackson, Arnold S., M.D., F.A.C.S., F.I.C.S., Madison, Wisconsin, *Moderator*
Burns, Charles W., M.D., F.A.C.S., F.I.C.S., Winnipeg, Canada
Howser, John W., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Hendricks, William A., M.D., F.I.C.S., Chicago, Illinois
Vaughn, Arkell M., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Lichtenstein, Manuel E., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Coffey, Ralph R., M.D., F.A.C.S., F.I.C.S., Kansas City, Missouri

10:30-11:00 **Intermission to View Exhibits**

Cardiovascular Symposium

11:00-11:20 Fell, Egbert H., M.D., F.A.C.S.
Chicago, Illinois
Clinical Associate Professor of Surgery, University of Illinois Medical School; Attending Surgeon, Presbyterian and Cook County Hospitals; Consultant in Cardio-Vascular Surgery, Mt. Sinai Hospital.
"Surgery for Congenital Anomalies of the Arch of the Aorta"

11:20-11:40 Potts, Willis J., M.D., F.A.C.S.
Chicago, Illinois
Associate Professor of Surgery, Northwestern University Medical School; Surgeon-in-Chief, Children's Memorial Hospital.
"Evaluation of the Surgical Treatment of Congenital Pulmonary Stenosis"

11:40-12:00 Pearl, Felix L., M.D., F.A.C.S., F.I.C.S., San Francisco, California
Chief, Department of Sympathetic and Vascular Surgery, Mount Zion Hospital.
"Roentgenologic Visualization of the Coronary Arteries in the Intact Animal"

12:00-12:20 Samuels, Saul S., M.D.
New York, New York
Director and Attending Angiologist, The Brooklyn Hospital for the Aged; Chief Department of Peripheral Arterial Diseases, Stuyvesant Polyclinic Hospital; Associate Attending Angiologist, Manhattan General Hospital.
"Treatment of Gangrene of the Extremities"

AFTERNOON SESSION

Presiding: Curtice Rosser, M.D., F.A.C.S., F.I.C.S., Dallas, Texas
Secretary: Ralph E. Scovel, M.D., F.I.C.S., San Francisco, California

P.M.
2:00- 2:20 Maxeiner, Stanley R., M.D., F.A.C.S., F.I.C.S., Minneapolis, Minnesota
Clinical Professor of Surgery, University of Minnesota Medical School; Senior Consultant in Surgery, U. S. Veterans Hospital, Minneapolis.
"Synovioma: Review of the Literature, Diagnosis, Pathology, Treatment, End Results"

2:20- 2:40 Kurten, Russell M., M.D., F.A.C.S.
Racine, Wisconsin
Chief of Surgery, St. Mary's Hospital; Consulting Surgeon, St. Luke's Hospital.
"Management of Intestinal Fistula"

2:40- 3:00 Koontz, Amos R., M.D., D.Sc. (Hon.), F.A.C.S., Baltimore, Maryland
Assistant Professor of Surgery, Johns Hopkins University School of Medicine.
"Difficult Hernias: Use of Tantalum Mesh in Repair"

3:00- 3:20 Adson, Alfred W., M.D., F.A.C.S., F.I.C.S. (Hon.), Rochester, Minnesota
Professor of Neurosurgery, Mayo Foundation; Senior Neurosurgeon, Mayo Clinic.
"Cervical Ribs: Symptoms, Differential Diagnosis and Indications for of the Insertion of the Scalenus Anticus Muscle"

3:20- 4:00 **Intermission to View Exhibits**

4:00- 4:20 Marshall, Samuel F., M.D., F.A.C.S.
Boston, Massachusetts
Surgeon, Lahey Clinic, New England Deaconess Hospital and New England Baptist Hospital.
"Follow-up Results of Surgery in Gastric Cancer; A Plea for Earlier Diagnosis and More Radical Surgery"

4:20- 4:40 Dotter, Charles T., M.D.
New York, New York
Assistant Professor of Radiology, Cornell University Medical College; Instructor in Medicine, Cornell University Medical College.
and
Steinberg, Israel, M.D.
New York, New York
"Angiocardiography in the Differential Diagnosis and Prognostic Evaluation of Mediastinal Tumors"

EVENING SESSION

Grand Ballroom
Presiding: M. Leopold Brodny, M.D., F.A.C.S., F.I.C.S., Boston, Massachusetts
Secretary: Cyril K. Church, M.D., F.I.C.S., New York, New York

Urology
P.M.

8:00- 8:10 Thompson, Gershom J., M.D., F.A.C.S., F.I.C.S. (Hon.)
Rochester, Minnesota
"Recent Advances in Prostatic Surgery of Interest to the General Surgeon"

8:10- 8:20 Rolnick, Harry C., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
"Urological Literature and the General Surgeon"

8:20- 8:30 Smith, Parke G., M.D., F.A.C.S.
Cincinnati, Ohio
"Recent Urological Armamentarium of Interest to the General Surgeon, Especially Renal Arteriography"

8:30- 8:40 Burns, Edgar, M.D., F.A.C.S.
New Orleans, Louisiana
"Progress in Pediatric Urology of Interest to the General Surgeon"

8:40- 8:50 Carroll, Grayson, M.D., F.A.C.S.
St. Louis, Missouri
"Antibiotics"

8:50- 9:10 Discussion

Obstetrics and Gynecology

Presiding: Gilbert F. Douglas, M.D., F.A.C.S., F.I.C.S., Birmingham, Alabama

9:00- 9:10 Kelso, Joseph W., M.D., F.A.C.S., F.I.C.S., Oklahoma City, Oklahoma
"What's New in Pelvic Surgery"

9:10- 9:20 Mishell, Daniel R., M.D., F.I.C.S.
Beverly Hills, California
"Recent Developments in the Study of Sterility"

9:20- 9:30 Soule, Samuel D., M.D., F.A.C.S.
St. Louis, Missouri
"Control and Elimination of the Acute Post-Surgical Menopause with Use of Estradiol Pellet Performed at the Time of Surgery"

9:30- 9:40 Greenblatt, Robert B.
Augusta, Georgia
"Clinical Application of Vulvar Fluorescence"

Wednesday, September 12

MORNING SESSION

Presiding: George M. Curtis, M.D., F.A.C.S., F.I.C.S. (Hon.), Columbus, Ohio
Secretary: Lloyd Netto, M.D., F.I.C.S.
West Palm Beach, Florida

Symposium: "Acute Intestinal Obstruction"
A.M.

9:00- 9:20 Gatch, Willis D., M.D., F.A.C.S.
Indianapolis, Indiana
Professor of Surgery and Head of Department of Surgery, Indiana University School of Medicine
"The Causes of Death from Bowel Obstruction, with Deductions on Treatment"

9:20- 9:40 Lockwood, Ira H., M.D., F.I.C.S. (Radiology), Kansas City, Missouri
Director, Department of Radiology, Research Hospital and Clinic; Consulting Radiologist, Kansas City Municipal Hospital
"Acute Small Intestinal Obstructions"

9:40-10:00 Hunt, Claude J., M.D., F.A.C.S., F.I.C.S., Kansas City, Missouri
Chief, Hunt Surgical Clinic; Chief Surgeon, Research Hospital and Kansas City General Hospital
"Acute Intestinal Obstruction in the Small Bowel"

10:00-10:20 Harris, Franklin I., M.D., F.A.C.S., F.I.C.S., San Francisco, California
Chief of Staff and Chief of Department of Surgery, Mount Zion Hospital
"Indications and Contra-Indications for Intestinal Intubation in Acute Intestinal Obstruction"

10:20-11:00 Intermission to View Exhibits

11:00-12:00 Panel Discussion: "Acute Intestinal Obstruction"
Acuff, Herbert, M.D., F.A.C.S., F.I.C.S., Knoxville, Tennessee, *Moderator*
Thorek, Philip, M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Perkins, Guy V., M.D., F.A.C.S., Chicago, Illinois
Noble, Thomas B., Jr., M.D., F.I.C.S., Indianapolis, Indiana

AFTERNOON SESSION

Presiding: R. J. Wilkinson, M.D., F.A.C.S., F.I.C.S., Huntington, West Virginia
Secretary: Andrew W. Bunten, M.D., F.I.C.S., Cheyenne, Wyoming

P.M.

2:00- 2:20 Appleby, Lyon H., M.D., F.R.C.S. (Eng.), F.R.C.S. (Can.), F.A.C.S., F.I.C.S., Vancouver, Canada
Chief Surgeon, St. Paul's Hospital; Consulting Surgeon, Children's Hospital
"Gas Cysts of the Intestine"

2:20- 2:40 Thompson, William J., M.D., F.A.C.S., F.I.C.S., St. Louis, Missouri
Chief, Surgical Division, De Paul Hospital; Surgical Consultant, St. Louis City Hospital
"Acute Sigmoid Diverticulitis"

2:40- 3:00 Bisgard, J. Dewey, M.D., F.A.C.S.
Omaha, Nebraska
Professor of Surgery, University of Nebraska School of Medicine; Chief of Surgery, Bishop Clarkson Memorial Hospital; Attending Surgeon, Nebraska Methodist and Children's Memorial Hospitals
"Some Benign Surgical Lesions of the Esophagus"

3:00- 3:20 Coleman, Everett P., M.D., F.A.C.S., F.I.C.S., Canton, Illinois
Chief of Staff, Graham Hospital; Chief Surgeon, Coleman Clinic
"Late Complications Following Gallbladder Surgery"

3:20- 4:10 Intermission to View Exhibits

4:10- 4:30 Klemme, Roland M., M.D., F.A.C.S., F.I.C.S., St. Louis, Missouri
Professor of Surgery, St. Louis University School of Medicine
"Pain—Chemotherapeutic and Surgical Approach"

4:30- 4:50 Bartlett, Willard, Jr., M.D., F.A.C.S., F.I.C.S., St. Louis, Missouri
Assistant Professor of Clinical Surgery, St. Louis University School of Medicine
"Obesity in Relation to Ventral Hernia Repair"

Wednesday Evening, September 12

Banquet

Grand Ballroom, Palmer House, Chicago
7:00 P.M.
(Dress Optional)
A. Lawrence Abel, M.S., London; F.R.C.S. (Eng.), F.I.C.S. (Hon.), London, England

Member of Council, Royal College of Surgeons of England; Senior Surgeon, The Princess Beatrice Hospital; Senior Surgeon, The Gordon Hospital for Rectal and Gastro-Enterological Diseases; Surgeon, The Royal Cancer Hospital; President, Metropolitan Counties Branch, British Medical Association; Member of Council, British Medical Association; Hon. Fellow of the American Medical Association; Hon. Fellow of the American Proctologic Society.

"What Is Happening in Britain—Fact and Fiction"

Thursday, September 13

MORNING SESSION

Presiding: Paul F. Doege, M.D., F.A.C.S., F.I.C.S., Marshfield, Wisconsin

Secretary: J. M. de los Reyes, M.D., F.A.C.S., F.I.C.S., Los Angeles, California

A.M.

9:00- 9:20 McRoberts, J. W., M.D., M.C., M.Sc. (Surg.), F.A.C.S., F.I.C.S.
Sheboygan, Wisconsin
Preceptor, University of Wisconsin Medical School; Surgeon, Sheboygan Memorial Hospital.
"Experiences with Acute Pain in the Left Lower Quadrant"

9:20- 9:30 Lans, Hyman S., M.D.
Chicago, Illinois
Resident Surgeon, Cook County Hospital; Research Fellow, Hektoen Institute for Medical Research of the Cook County Hospital; Founder Junior Member, International College of Surgeons.
and
Stein, Irving F., Jr., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Associate Professor of Obstetrics and Gynecology, Northwestern University Medical School.
and
Meyer, Karl A., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Professor of Surgery, Northwestern University Medical School; Chairman, Department of Surgery, Cook County Hospital.
"The Occurrence and Treatment of Potassium Deficiency in Surgical Patients"

9:30- 9:40 Hobbins, William B., M.D.
Chicago, Illinois
Senior Surgical Resident, Cook County Hospital.
and
Aries, Leon J., M.D., F.A.C.S.
Chicago, Illinois
Assistant Professor of Surgery, Northwestern University Medical School; Professor of Surgery, Cook County Graduate School.
"Incarcerated Diaphragmatic Hernia"

9:40-10:00 Holmgren, Luther E., M.D., F.A.C.S.
Madison, Wisconsin
Surgeon, Jackson Clinic.
"Modern Concepts of Treatment of Varicose Veins"

10:00-10:40 Abel A. Lawrence, M.S., F.R.C.S.
London, England
Senior Surgeon, The Princess Beatrice Hospital; Senior Surgeon, The Gordon Hospital for Rectal and Gastro-Enterological Diseases; Surgeon, The Royal Cancer Hospital.
"Abdomino-Perineal Operation for Carcinoma of the Rectum"

10:40-11:00 **Intermission to View Exhibits**

11:00-11:20 Good, Louis P., M.D., M.S., F.A.C.S.
Texarkana, Texas
Chief of Staff, Southern Clinic; President of Staff, St. Michael's Hospital.
"A Quick Method for Mobilization of the Intra-Pancreatic Portion of the Common Duct and its Use in Repairing Extensive Defects in the Biliary System"

11:20-12:00 Allen, Harvey S., M.D., F.A.C.S.
Chicago, Illinois
Assistant Professor of Surgery, Northwestern University Medical School; Attending Surgeon, Passavant Memorial and Cook County Hospitals.
"Management of Burns"

AFTERNOON SESSION

Presiding: Karl A. Meyer, M.D., F.A.C.S., F.I.C.S., Chicago, Illinois

Secretary: J. O. Morgan, M.D., F.A.C.S., F.I.C.S., Gadsden, Alabama

P.M.

2:00- 2:20 Meyeding, Henry W., M.D., M.S. F.A.C.S., F.I.C.S., Rochester, Minnesota
Professor of Orthopedic Surgery, Mayo Foundation, University of Minnesota Medical School; Senior Consulting Orthopedic Surgeon, Mayo Clinic.
"Some Recent Advances in Surgery of the Bones and Joints"

2:20- 2:30 Hall, Custis Lee, M.D., F.A.C.S., F.I.C.S., Washington, D. C.
Clinical Professor of Surgery, George Washington Medical School; Chief, Department of Orthopedics, Doctors Hospital; Consultant in Orthopedic Surgery, Naval Medical Center.
"Discussion of Paper Presented by Dr. Henry W. Meyerding"

2:30- 2:40 Garceau, George J., M.D., F.I.C.S.
Indianapolis, Indiana
Professor of Orthopedic Surgery, Indiana University Medical School.
"Discussion of Paper Presented by Dr. Henry W. Meyerding"

2:40- 3:10 **Intermission to View Exhibits**

3:10- 3:30 Kline, Philip S., M.D.
San Antonio, Texas
Former Instructor of Neoplastic Diseases, Hines Hospital, Hines, Illinois; Former Chief, Surgical Service, McCloskey Veterans Administration Center, Temple, Texas.
"The Gastric Cripple Following Total Gastrectomy and a Suggested Solution"

3:30- 3:50 Yanagi, Soichi, M.D., F.I.C.S.
Sapporo, Japan
Professor of Surgery, Hokkaido University College of Medicine.
"Thermal Effects on Wound Healing"

3:50- 4:10 Mayo, Charles W., M.D., M.S., LL.D., F.A.C.S., Rochester, Minnesota
Professor of Surgery, Mayo Foundation, University of Minnesota Medical School; Surgeon, Mayo Clinic.
"Unsuspected Cholelithiasis Discovered at Laparotomy"

4:10- 4:30 Bendani, Prof. Dr. Giuseppe, M.D., F.I.C.S., Rome, Italy
Professor of Clinical Surgery, University of Rome.
(Title to be announced later)

Thursday, September 13

Convocation

Chicago Civic Opera House, Chicago

7:30 **Induction of new members**

Section Meetings

Orthopedic Section

Monday, September 10

MORNING SESSION

Palmer House, Crystal Room

Presiding: Edward L. Compere, M.D., F.A.C.S., F.I.C.S., Chicago, Illinois

Secretary: Carlo Scuderi, M.D., F.A.C.S., F.I.C.S., Chicago, Illinois

A.M.

9:30-10:00 Anderson, Roger, M.D., F.A.C.S., F.I.C.S., Seattle, Washington

Senior Consultant, University of Washington School of Medicine. Chief, Orthopedic Staff, King County Hospital, Orthopedic Consultant, U. S. Marine Hospital, Seattle

"Acrylic Replacements for Head and Neck of the Femur"

10:00-10:30 Chandler, Fremont A., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois

Professor of Orthopedic Surgery, University of Illinois School of Medicine, Senior Attending Orthopedic Surgeon, St. Luke's Hospital, Chicago

"Muscular Torticollis"

10:30-11:00 McMaster, Paul E., M.D., F.A.C.S., F.I.C.S., Los Angeles, California

Clinical Professor of Orthopedic Surgery, University of Southern California School of Medicine, Senior Orthopedic Consultant, Sawtell (U. S. Veterans') Hospital

"The Use of Suction Socket Prosthesis for Above-Knee Amputation"

11:00-11:30 Pipkin, Garrett, M.D., F.A.A.O.S., F.I.C.S., Kansas City, Missouri

Attending Orthopedic Surgeon, Kansas City General Hospital and St. Joseph Hospital

"Intramedullary 'K' Nail Fixation of the Humerus to the Spine of the Scapula for Shoulder Arthrodesis"

11:30-12:00 Young, H. Herman, M.D., M.S., F.A.C.S., Rochester, Minnesota

Assistant Professor of Orthopedic Surgery, The Mayo Foundation; Consulting Orthopedic Surgeon, Mayo Clinic, Colonial and St. Mary's Hospitals

"Non-Neurologic Lesions Simulating Protruded Intervertebral Disk"

AFTERNOON SESSION

P.M.

2:00- 2:30 Jewett, Eugene L., M.D., F.A.C.S., F.I.C.S., Orlando, Florida

Attending Orthopedic Surgeon, Orange Memorial Hospital, Orlando; Consulting Orthopedic Surgeon, Florida Sanitarium and Hospital, Orlando.

And Co-authors:

Albee, Fred H., Jr., M.D., F.I.C.S.
Powers, Earl J., M.D., F.I.C.S.
Stanford, Freeman DeWitt, M.D.

"Treatment of all Fractures of the Femoral Neck and Trochanteric Region with the Original One-Piece Flange Nail"

2:30- 3:00 Hall, Custis Lee, M.D., F.A.C.S., F.I.C.S., Washington, D. C.

Clinical Professor of Surgery, George Washington Medical School; Chief, Department of Orthopedics, Doctors Hospital, Consultant in Orthopedic Surgery, Naval Medical Center.

"Pelvic Anchor Supersedes Counter-Traction"

3:00- 3:30 Scuderi, Carlo S., M.D., F.A.C.S., F.I.C.S., Chicago, Illinois

Associate Professor of Surgery, University of Illinois School of Medicine; Professor of Surgery, Cook County Graduate School.

and

Ippolito, Anthony, M.D.

"Prevention and Treatment of Non-Union of Supra-Condylar Fractures of the Femur"

3:30- 4:00 Moe, John H., M.D., F.A.C.S. Minneapolis, Minnesota

Assistant Clinical Professor of Orthopedic Surgery, University Hospital, Chief, Orthopedic Staff, Minneapolis General Hospital.

"Treatment of Intertrochanteric Fractures. Experiences with Various Methods of Internal Fixation"

4:00- 4:30 Miller, Donald S., M.D., Ph.D., F.A.C.S., F.I.C.S., Chicago, Illinois

Professor of Orthopedic Surgery, Cook County Graduate School of Medicine; Chairman, Orthopedic Surgery, Chicago Medical School, Attending Surgeon, Cook County Hospital.

"Gangrene of the Extremities, Precipitated by Orthopedic and Traumatic Conditions (in Patients with Normal and Reduced Circulation)"

4:30- 5:00 Padula, Ralph H., M.D., F.I.C.S. South Norwalk, Connecticut

Attending Orthopedic Surgeon, Norwalk General Hospital, Director of Orthopedics, St. Joseph's Hospital, Stamford.

"Ruptured Intervertebral Discs, A Five-Year Follow-up of 114 Operated Cases"

Plastic Surgery Section

Tuesday, September 11

Palmer House, Crystal Room

MORNING SESSION

Presiding: Neal Owens, M.D., F.A.C.S., New Orleans, Louisiana

Secretary:

A.M.

9:00- 9:30 Owens, Neal, M.D., F.A.C.S., F.I.C.S. New Orleans, Louisiana

Professor of Plastic Surgery, Tulane University of Louisiana School of Medicine; Head of Department, Plastic Surgery, Eye, Ear, Nose and Throat Hospital, Senior Visiting Surgeon in Charge of Plastic Surgery (Tulane Unit), Charity Hospital.

"Chairman's Address"

9:30-10:00 Sutton, Leon E., M.D., F.A.C.S. Syracuse, New York

Professor of Clinical Plastic Surgery, Syracuse University College of Medicine, Chief of Plastic Surgery, University and Memorial Hospitals

"The Treatment of Scar Contractures of the Extremities in Children"

10:00-10:30 Figi, Frederick A., M.D., F.A.C.S. Rochester, Minnesota

Professor of Plastic Surgery, Minnesota Gradate School, Mayo Foundation; Head of Section, Plastic Surgery and Laryngology, Mayo Clinic

"Repair of Postoperative Harelip and Nasal Deformities"

10:30-11:00 Steffensen, Wallace H., M.D., F.A.C.S., F.I.C.S., Grand Rapids, Michigan

Consultant in Plastic Surgery, Blodgett Memorial Hospital, Grand Rapids.

"Further Considerations in the Repair of the Unilateral Cleft Lip"

11:00-11:30 O'Connor, Gerald Brown, M.D., F.A.C.S., San Francisco, California

Clinical Instructor in Surgery, Stanford University School of Medicine.
"The Treacher-Collins Syndrome"

11:30-12:00 Pickrell, Kenneth, M.D., F.A.C.S.
Durham, North Carolina
Professor of Plastic and Maxillo-Facial Surgery, Duke University School of Medicine and Duke Hospital, Durham.
"Tumors of the Face and Neck in Children"

12:00-12:30 Davis, Albert D., D.D.S., M.D., F.A.C.S., San Francisco, California
Assistant Clinical Professor of Surgery (Plastic), Stanford University School of Medicine.
"The Problem of Melanoma"

AFTERNOON SESSION

P.M.

2:00- 2:30 Dingman, Reed O., D.D.S., M.D., M.S., F.A.C.S., Ann Arbor, Michigan
Associate Professor of Oral Surgery and Special Lecturer in Oral and Maxillofacial Surgery, University of Michigan Medical School.
"The Use of Iliac Bone in the Repair of Cranial Defects"

2:30- 3:00 Adams, William M., M.D., F.A.C.S., F.I.C.S., Memphis, Tennessee
Assistant Professor of Surgery (Plastic), University of Tennessee College of Medicine; Attending Plastic Surgeon, Baptist Memorial, St. Joseph, Methodist and John Gaston Hospitals, Memphis.
"The Relation of the Plastic Surgeon in the Rehabilitation of the Crippled Child"

3:00- 3:30 Pierce, George Warren, M.D., F.A.C.S., San Francisco, California
Chief, Department of Plastic Surgery, St. Francis Hospital; Consulting Plastic Surgeon, Children's, U. S. Marine, Mount Zion, Southern Pacific, and French Hospitals.
"Early Orthodonture in the Cleft Palate Patient"

3:30- 4:00 Slaughter, Wayne B., M.D.
Chicago, Illinois
"The Service Problem in Complete Rehabilitation of the Child with Cleft Palate"

4:00- 4:30 Kemper, John W., D.D.S., M.D., F.A.C.S., Ann Arbor, Michigan
Professor of Oral Surgery, Dentistry, University of Michigan Medical School; Head of Oral Surgery, University Hospital.
"Retropositioning the Soft Palate by Osteomucoperiosteal Flaps"

4:30- 5:00 Kitlowski, Edward A., M.D.
Baltimore, Maryland
Clinical Professor of Plastic Surgery, University of Maryland School of Medicine.
"Reconstruction of Post-traumatic Palates"

5:00- 5:30 Bethea, John Hardee, M.D.
Detroit, Michigan
Senior Instructor in Plastic Surgery, Wayne University College of Medicine; Diplomate of American Board of Plastic Surgery.
"Surgical Correction of Congenital Deformities of the Hands"

Section on Ophthalmology and Otorhinolaryngology

Tuesday, September 11

Clinical Meetings

MORNING SESSION—OPHTHALMOLOGY

Chicago Eye, Ear, Nose and Throat Hospital
231 West Washington Street

A.M.

9:00- 9:30 **Surgery, Dry Clinics. Round-Table Discussions.**
Nugent, Oscar B., M.D., F.A.C.S., F.I.C.S.
Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College and Staff.
"Surgery of Dislocated Lenses in Children" (Author's Technique) Slides, Dry Clinics and Presentation of Cases.

Wolfe, Otis R., M.D., F.I.C.S.
Marshalltown, Iowa
Chief, Department of Ophthalmology, Deaconess Hospital.
"Marfan's Syndrome"

Perritt, Richard A., M.D., F.I.C.S.
Chicago, Illinois
Associate, Department of Ophthalmology, Northwestern University.

MORNING SESSION—OTORHINOLARYNGOLOGY

Clinic-Research and Educational Hospital
1835 West Polk Street

10:00-12:00 **"What's New in Broncho-Esophagology"**
Holinger, H. Paul, M.D., F.A.C.S.
Chicago, Illinois
Professor, Broncho-Esophagology, Department of Otolaryngology, University of Illinois.

Wednesday, September 12

Palmer House, Crystal Room

MORNING SESSION—OTORHINOLARYNGOLOGY

Presiding: Matthew S. Ersner, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylania
Secretary: Louis Savitt, M.D., F.I.C.S., Chicago, Illinois

A.M.

10:00-10:20 Goldman, Irving B., M.D., F.A.C.S., F.I.C.S., New York, New York
Attending Rhinoplastic Surgeon, Mount Sinai Hospital; Attending Otolaryngologist and Rhinoplastic Surgeon, Beekman-Downtown Hospital.
"Maxillo-Facial Triad and Its Correction"

10:30-10:50 McNaught, Robert Chamberlain, M.D.
San Francisco, California

11:00-11:20 Lederer, Francis L., M.D., F.A.C.S.
Chicago, Illinois
Professor and Head, Department of Otolaryngology Clinic-Research and Educational Hospital, University of Illinois; Otolaryngologist-in-Chief, Illinois Eye and Ear Infirmary.
"The Menacing Spectre of Chronic Aural Suppuration"

11:30-11:50 Tucker, Gabriel, M.D., F.A.C.S.
Philadelphia, Pennsylvania
Professor of Broncho-Esophagology and Laryngeal Surgery, Graduate School of Medicine, University of Pennsylvania.
"Tumors of the Larynx"

12:00 Noon **Luncheon Meeting of the Executive Committee**

AFTERNOON SESSION—OPHTHALMOLOGY

Palmer House, Crystal Room

Presiding: Edmund B. Spaeth, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
Secretary: Clarence H. Albaugh, M.D., F.A.C.S., F.I.C.S., Los Angeles, California

P.M.

2:20- 2:40 Gailey, Watson, M.D., F.I.C.S.
Bloomington, Illinois
Chief Surgeon, Gailey Eye Clinic.
"Do's and Don'ts of Cataract Surgery"

Ophthalmology and Otorhinolaryngology Section

Wednesday, September 12

2:50- 3:10 **Berens, Conrad, M.D., F.A.C.S., F.I.C.S., New York, New York**
pital, University of Illinois. Otolaryngologist-of Research, New York Eye and Ear Infirmary.
and
Girard, Louis J., M.D.
New York, New York
"Secondary Glaucoma" (Surgical Management and with Especial Reference to Cycloelectrolysis)

3:20- 3:40 **Mayer, Leo J., M.D., F.I.C.S.**
St. Louis, Missouri
Ophthalmologist, Jewish Hospital.
"Fundamentals of Eye Surgery"

3:50- 4:10 **Krewson, William E., III, M.D., F.A.C.S., Philadelphia, Pennsylvania**
Assistant Professor of Ophthalmology, Graduate School, University of Pennsylvania
"Effect of Inferior Oblique Surgery upon Lateral Deviation"

Thursday, September 13

MORNING SESSION—OPHTHALMOLOGY
Palmer House, Crystal Room
Presiding: Edmund B. Spaeth, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
Secretary: Richard A. Perritt, M.D., F.I.C.S., Chicago, Illinois

A.M.
10:00-10:20 **(Paper by West Coast Speaker—Retinal Separation.)**
10:30-10:50 ***(Paper by Foreign Guest Speaker)***
11:00-12:00 **Study Club: "Interesting Maneuvers in Cataract Surgery"**
Moderator: Paul C. Craig, M.D., F.A.C.S., F.I.C.S., Reading, Pennsylvania
Instructors: Watson Gailey, M.D., F.I.C.S., Bloomington, Illinois
Samuel G. Higgins, M.D., F.I.C.S., Milwaukee, Wisconsin

Ophthalmology and Otorhinolaryngology Section

Thursday Evening, September 13

MORNING SESSION—OTORHINOLARYNGOLOGY
Albert Merritt Billings Hospital
950 East 59th Street

10:00-12:00 **Surgical Clinics**
"The Surgical Management of Carcinoma of the Paranasal Sinuses"
Lindsay, John, M.D., F.A.C.S.
Chicago, Illinois
Chief of Staff, Chicago University Clinic: Professor of Otolaryngology, Chicago University.
and
Schuknecht, Harold F., M.D.
Chicago, Illinois

12:30 ***Luncheon—Palmer House***
Presiding: Edmund B. Spaeth, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
Secretary: Paul C. Craig, M.D., F.A.C.S., F.I.C.S., Reading, Pennsylvania
Luncheon of entire Section in honor of foreign guests Non-scientific addresses by guests of honor for Ophthalmology and Oto-Rhino-Laryngology.

2:30- 2:45 **Business Meeting of Entire Section**
Palmer House, Crystal Room
Presiding: Edmund B. Spaeth, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
Secretary: Paul C. Craig, M.D., F.A.C.S., F.I.C.S., Reading, Pennsylvania

AFTERNOON SESSION—OTORHINOLARYNGOLOGY
Presiding: Chevalier L. Jackson, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
Secretary: Louis Savitt, M.D., F.A.C.S., F.I.C.S., Chicago, Illinois

Thursday, September 13

2:45- 3:15 **Study club: On Treatment of Sinus Diseases**
Moderator: Matthew S. Ersner, M.D., F.A.C.S., F.I.C.S., *Philadelphia*, Pennsylvania
Instructors: To be announced later.
3:30- 4:00
(Paper by Foreign Guest Speaker)

Friday, September 14

Ophthalmology—Clinical Meetings
Northwestern University Medical School
Ward Memorial Building
303 East Chicago Avenue
Dry Clinics. Discussions of Various Phases of Ophthalmology.
Vail, Derrick T., M.D., F.A.C.S.
Chicago, Illinois
Professor and Chairman, Department of Ophthalmology, Northwestern University Medical School and Staff.

Urology Section

Wednesday Morning, September 12

Palmer House, Room 18
Presiding: M. Leopold Brodny, M.D., F.A.C.S., F.I.C.S., Boston, Massachusetts
Secretary: Cyril Klock Church, M.D., F.I.C.S., New York, New York

A.M.
9:00- 9:20 **Flocks, Rubin H., M.D., F.A.C.S.**
Iowa City, Iowa
Professor and Head, Department of Urology, State University of Iowa College of Medicine, Chief Urologist, University Hospitals.
"Carcinoma of the Prostate"

9:20- 9:40 ***McCrea, Lowrain E., M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania***
Clinical Professor of Urology, Temple University School of Medicine; Attending Urologist, Philadelphia General Hospital.
"The Importance of Nerve Supply of the Urinary Bladder in Surgery of the Recto-Sigmoid"

9:40-10:00 **de la Peña, Alfonso, Prof. Dr., F.I.C.S., Madrid, Spain**
Professor of Urology, Faculty of Medicine, University of Madrid.
"Phlebographic Studies of the Pelvic Plexus on the Living Subject"

10:00-10:40 **Intermission to View Exhibits**

10:40-11:00 **Tracy, Edward M., M.D.**
Buffalo, New York
"Steroid Hormones in Carcinoma of the Prostate"

11:00-11:20 **Nicely, Eugene Park, M.D., F.I.C.S.**
Knoxville, Tennessee
Chief of Urology, St. Mary's Memorial Hospital.
"Urological Symptoms Relieved by

Postural Correction"

11:20-11:40 Thompson, Gershom J., M.D., F.A.C.S., F.I.C.S. (Hon.), Rochester, Minnesota
"The Treatment of Vesical Neoplasm"

11:40 **Discussion—Moderator:**
George H. Ewell, M.D., F.I.C.S.
Madison, Wisconsin

Obstetrics and Gynecology Section

Wednesday Morning, September 12

Palmer House, Room 14

A.M.

9:00- 9:15 Cohen, M. Stanley, M.D., F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania
Associate, Department of Obstetrics and Gynecology, Temple University Medical School; Assistant Obstetrician and Gynecologist, Jewish Hospital; Associate Obstetrician and Gynecologist, Temple University Hospital.
"The Practical Application of Analgesia and Anesthesia in Obstetrics"

9:15- 9:30 Galloway, Charles E., M.D., F.A.C.S.
Evanston, Illinois
Former Assistant Professor of Obstetrics and Gynecology, Northwestern University Medical School; Obstetrician and Gynecologist, Evanston Hospital.
"The Cervix in Pregnancy"

9:30 9:45 Daniel, Walter W., M.D., F.I.C.S.
Atlanta, Georgia
Former Instructor, Emory University School of Medicine.
and
Inman, John, M.D.
"Rupture of the Pregnant Uterus"

9:45-10:00 Hahn, George A., M.D., F.A.C.S.
Philadelphia, Pennsylvania
Associate in Obstetrics and Gynecology, Jefferson Medical College.
"Uterine Malignancy—Method of Treatment"

10:00-10:45 **Intermission to View Exhibits**

10:45-11:00 Rucker, M. Pierce, M.D., LL.D.
Richmond, Virginia
Emeritus Obstetrician-in-Chief, Johnston-Willis Hospital.
"Obstetric Difficulties"

11:00-11:15 Andrews, Gould, M.D.
Oak Ridge, Tennessee
Assistant Professor of Medicine, Medical College of Alabama; Chief of Clinical Service, Oak Ridge Institute of Nuclear Studies.
"Therapeutic Uses of Radioisotopes"

11:15-11:30 Douglas, Gilbert F., M.D., F.A.C.S., F.I.C.S., Birmingham, Alabama
Associate Professor of Gynecology, Medical College of Alabama.
(Chairman's Address) "Uterine Bleeding—Vision of Joy or a Sign of Woe"

11:30-11:45 Ayre, James E., M.D.
Montreal, Canada
"Cancer Detection"

Occupational Surgery Section

Thursday Afternoon, September 13

Palmer House, Room 14

P.M.

2:00- 2:30 Aitken, Alexander P., M.D., F.A.C.S.
Boston, Massachusetts
Instructor in Orthopedic Surgery, Tufts College Medical School.
"End Results of Ruptured Intervertebral Discs in Industry"

2:30- 3:00 Kelikian, Hampar, M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
Assistant Professor of Bone and Joint Surgery, Northwestern University Medical School; Senior Orthopedic Surgeon, Wesley Memorial Hospital; Attending Orthopedic Surgeon, Cook County Hospital.
"Arthritic Occupational Disabilities and their Treatment by Surgery"

3:00- 3:30 **Intermission to View Exhibits**

3:30- 4:00 Lewis, Elbert K., M.D., F.R.S.N.A., F.I.C.S. (Radiology), Chicago, Illinois
Instructor in Radiology, Northwestern University Medical School; Radiologist, St. Bernard's Hospital.
"Accessory Bones and Anomalies often Mistaken for Fractures"

4:00- 4:30 Lambert, Claude, N., M.D., M.S.
Chicago, Illinois
Associate Professor of Orthopedic Surgery, University of Illinois College of Medicine; Attending Orthopedic Surgeon, St. Luke's Hospital.
"The Relationship of Occupational Strains to the 'Disc Syndrome'"

4:30- 5:00 Burkholder, Theodore M., M.D., F.A.C.S., Chicago, Illinois
Attending Urologist, Illinois Central, Evangelical and Englewood Hospitals.
"Occupational Injuries to the Male Urethra"

Joint Meeting of Obstetrical and Gynecological Section with Urological Section

Wednesday Afternoon, September 12

Meeting Dedicated to Dr. Guy L. Hunner
Presiding: George H. Ewell, M.D., F.I.C.S.,
Madison, Wisconsin

P.M.

2:00- 2:15 Guy L. Hunner, M.D., F.A.C.S.
Baltimore, Maryland
"A Few Reminiscences of One Who Has Worked in Close Association with Gynecologists, Obstetricians, and Urologists for More than a Half-Century."

2:15- 2:30 Howard W. Jones, Jr., M.D.
Baltimore, Maryland
"Gynecological Aspects of Urology."

Symposium
"The Renal Factor in Pregnancy—Non-Toxemic Hypertension of Pregnancy."

2:30- 2:45 Gynecological Viewpoint: Wynne Silbernagel, M. D., Columbus, Ohio

2:45- 3:00 Urological Viewpoint: John W. Ferrin, M.D., Chicago, Illinois

3:00- 3:10 **Discussants:**
Edwin J. Decosta, M.D.
Chicago, Illinois
Walter J. Reich, M.D., F.A.C.S., F.I.C.S., Chicago, Illinois

3:10- 3:20 **General Discussion**

Symposium

"Stress Incontinence in the Female."

3:20- 3:35 Gynecological Approaches: Charles B. Kelley M.D., F.A.C.S., F.I.C.S. Jersey City, New Jersey

3:35- 3:50 Urological Approaches: Herbert E. Landes, M.D., F.A.C.S., Chicago

3:50- 4:00 **Discussants:**

M. Leopold Brodney, M.D., F.A.C.S., F.I.C.S., Boston, Massachusetts
Alexander A. Levi, M.D., F.A.C.S., F.I.C.S., Boston, Massachusetts.

4:00- 4:10 ***General Discussion***

Symposium

"Management of the Surgical Traumatized Ureter."

4:10- 4:25 Urological Factor: Alfonso Davalos, M.D., New York City, New York

4:25- 4:40 Gynecological Factor: To be announced

4:40- 4:50 **Discussants:**

J. P. Greenhill, M.D., F.A.C.S., F.I.C.S., Chicago, Illinois
To be announced

4:50- 5:00 ***General Discussion***

Announcement

International Board of Occupational Surgery

The Executive Council of the United States Chapter and the Board of Trustees of the International College of Surgeons have unanimously approved the formation *of an International Board of Occupational Surgery, the aims of which are (a) elevation* of standards for the practice of occupational surgery, (*b*) conservation of the health of the worker after occupational injury, (*c*) official recognition of this specialty, (*d*) stimulation of interest in this field by students and members of the profession, and *(e) cooperation in the establishment of facilities for graduate education* in occupational surgery by means of residencies in hospitals affiliated with medical schools, or their equivalents.

For further details, address Dr. Arnold S. Jackson, Secretary, United States Chapter, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10, Illinois.

SCIENTIFIC MOTION PICTURE PROGRAM

Philip Thorek, M.D., Chairman
Arkell M. Vaughn, M.D.
Jerome J. Moses, M.D.
Adolph M. Maller, M.D.

Monday, Tuesday, Wednesday and Thursday September 10, 11, 12 and 13, 1951

The motion picture theater will be in continuous operation from 10 a.m. to 12 noon and 2 to 5 p.m., Monday through Thursday. Each film will be shown twice during this period as scheduled.

Monday, September 10 and Wednesday, September 12, 10 a.m.

Removal of Massive Osteoma of Skull with Tantalum Cranioplasty

Ralph M. Stuck, University of Colorado School of Medicine, Denver

This film represents the three operative procedures necessary to remove a massive osteoma of the vertex of the skull and the right supra-orbital portion of the skull. This tumor was known to have existed since 1934 and was removed in 1950. Roentgenograms of the skull taken 23 years ago are included in the picture. The details of the tantalum cranioplasty are also shown, as well as the postoperative photographs of the patient.
Silent: 30 minutes.

Monday and Wednesday, 10:30 a.m.

Goniotomy

Harold G. Scheie, University of Pennsylvania, Philadelphia

The rationale for goniotomy is depicted. The technique for performing the operation is outlined. The results obtained with the operation until 1949 are tabulated.
Silent: 8 minutes.

Monday and Wednesday, 10:38 a.m.

Surgical Management of Primary Hyperthyroidism

Frank H. Lahey, The Lahey Clinic, Boston

The method of raising the skin flaps, the preservation of the recurrent laryngeal nerve, the demonstration of the parathyroids preserved and the method of doing a radical subtotal thyroidectomy as employed in this clinic are demonstrated. The film also shows the method of exposure of the upper pole, the method of ligation of the inferior thyroid artery and the method of complete removal of all the isthmus from the trachea.
Sound: 23 minutes.

Monday and Wednesday, 11:01 a.m.

Thymectomy for Myasthenia Gravis

Alfred Goldman, Cedars of Lebanon Hospital, Los Angeles

This film depicts the history, operation, roentgenograms, therapeutics, pathology and result in thymic tumors associated with myasthenia gravis.

Monday and Wednesday, 11:25 a.m.

Pulmonary Stenosis: Surgical Treatment of a Congenital Heart Disease

Ralph Adams, University of Louisville, Kentucky

Demonstration of the physiological changes in a case of pulmonary stenosis with operative correction.
Silent: 24 minutes.

Monday and Wednesday, 11:49 a.m.

Hernia of the Lung

Lawrence M. Shefts, Baylor University College of Medicine, Texas

This film illustrates the diagnosis of pulmonary hernia, including roentgenographic findings. The repair as shown requires dissection and closure of the sac and utilization of periosteal flaps from the ribs above and below the defect.
Silent: 11 minutes.

Monday, September 10, and Wednesday, September 12, 2 p.m.

Complete Exenteration of the Pelvis

Alexander Brunschwig and Virginia K. Pierce, Cornell University Medical College, New York

Wide excision of the involved tissues as well as the surrounding structures are shown. The technic of bilateral implantation of the ureters is demonstrated. Postoperative views of a group of patients are shown.
Silent: 29 minutes.

Monday and Wednesday, 2:29 p.m.

Parotid Tumors

Raymond W. McNealy, Northwestern University Medical School, Chicago

The technic of surgical excision of tumors of the parotid is demonstrated. The surgical anatomy is depicted and postoperative results are shown.
Silent: 12 minutes.

Monday and Wednesday, 2:41 p.m.

Ulnar Nerve and Soft Tissue Defect and Simultaneous Repair in Forearm

Armed Forces Institute of Pathology, Washington, D. C.

This film demonstrates the method of repair of an involved ulnar nerve and a rather extensive soft tissue defect in the forearm. The use of a pedicle graft between the abdominal wall and the forearm is shown. Postoperative views are included showing the functional result and nerve regeneration.
Sound: 11 minutes.

Monday and Wednesday, 2:52 p.m.

Esophageal Diverticulectomy

Conrad J. Baumgartner, College of Medical Evangelists, Los Angeles

The excision of a large pharyngeal esophageal diverticulum in an 84-year-old man is shown. A two-stage procedure was carried out for the following reasons: (1) age of patient, (2) marked debility of the patient, (3) size of the sac with a wide neck, and (4) deep extension of sac into the mediastinum. A follow-up picture taken 6 months postoperatively shows marked gain in weight.
Silent: 21 minutes.

Monday and Wednesday, 3:13 p.m.

Transthoracic Resection for Carcinoma of Esophagus

R. Arnold Griswold, University of Louisville, Kentucky

History of a case of carcinoma of the esophagus with demonstration of the operative technic is shown.
Silent: 20 minutes.

Monday and Wednesday, 3:33 p.m.

Spontaneous Rupture of the Esophagus

S. Allen Mackler, Cook County Hospital, Chicago

The physiologic mechanism whereby rupture of the esophagus occurs is described The historical aspect of the disease is noted. A case is presented, and the significant diagnostic findings are described. Preoperative radiographic films are shown The thoracic approach to the rent in the
esophagus [illegible] lying free in
the pleural [illegible] viscera. The
method of [illegible] graphic films,
and the pa[illegible] ited.
Silent: 18 minutes.

Monday and Wednesday, 3:51 p.m.

Ureterosigmoid Anastomosis by Direct Elliptical Connection

Reed M. Nesbit, University of Michigan, Ann Arbor

Transplantation of the ureters into the sigmoid is demonstrated by means of a direct elliptical connection. A transverse incision is utilized Colored illustrations and roentgenograms amplify the film.
Silent. 30 minutes.

Monday and Wednesday, 4:21 p.m.

Right Hemithyroidectomy for Cystic Adenoma

Bernard J. Ficarra, St. Peter's Hospital, Brooklyn

The technic of hemi-thyroidectomy for cystic adenoma involving the right lobe is shown. The surgical anatomy is emphasized.
Silent· 9 minutes.

Monday and Wednesday, 4:30 p.m.

Surgical Treatment of Carotid Body Sensitivity in Man

Armed Forces Institute of Pathology, Washington, D. C.

This film demonstrates the effects of pressure upon a sensitive carotid body. Bilateral removal of the carotid bodies is shown, *including the nerve of Hering*. Postoperative results are included.
Sound: 24 minutes.

Tuesday, September 11, and Thursday, September 13, 10 a.m.

Surgical Treatment for Congenital Pulmonary Stenosis

George H. Humphreys II, College of Physicians and Surgeons, New York City

[illegible] diagrams of the anatomy
[illegible] a 7-year-old child is shown
[illegible] symptoms of pulmonary
[illegible] ed on the track; the roent-
[illegible] are shown, as well as the
[illegible] The main steps in the
procedure of pulmonary valvulotomy are demonstrated, with emphasis on the special instruments employed in the operation. Her improvement is shown, and comparative postoperative findings discussed.
Sound: 23 minutes.

Tuesday and Thursday, 10:23 a.m.

Ligation of the Vena Cava and Ovarian Vessels for Suppurative Pelvic Thrombophlebitis

Conrad Collins, Ochsner Clinic, New Orleans

This film [illegible] he inferior vena
cava associ [illegible] of the ovarian
vessels for [illegible] connection with
the ligatior [illegible] ympathectomy is
done also [illegible] *ient are shown.*
Silent: 19 minutes.

Tuesday and Thursday, 10:42 a.m.

Horseshoe Kidney: One-Stage Transperitoneal Bisection of Kidney Isthmus and Bilateral Nephropexy

Charles M. Stewart, University of Southern California College of Medicine, Los Angeles

The preoperative history, laboratory data and roentgen findings in a female patient suffering from a horseshoe kidney which has impaired drainage on both sides are shown. The surgical procedure is performed in one stage through a transverse abdominal incision, transperitoneally. The kidney isthmus is well demonstrated. After bisection of the isthmus a bilateral nephropexy was done. Postoperative pyelograms are shown, taken 5 weeks and at 5 months.
Silent· 21 minutes.

Tuesday and Thursday, 11:03 a.m.

One-Stage Suprapubic Prostatectomy with Primary Closure of the Bladder

George H. Ewell and Harold W. Bruskewitz, Jackson Clinic, Madison, Wisconsin

A discussion is presented of the various procedures which have been found to be extremely satisfactory in doing a one-stage suprapubic prostatectomy with primary closure of the bladder. Particular attention is called to the method of controlling bleeding.
Silent: 22 minutes.

Tuesday and Thursday, 11:25 a.m.

Total Abdominal Hysterectomy and Perineorrhaphy

Joe Vincent Meigs, Harvard Medical School, Boston

Total abdominal hysterectomy and perineorrhaphy are depicted. The surgical anatomy and relationship of the ureters are shown. Postoperative results of this reconstructive procedure are included.
Silent: 17 minutes.

Tuesday and Thursday, 11:42 a.m.

Abdominoperineal Resection for Carcinoma *of Rectum*

Richard B. Cattell, Lahey Clinic, Boston

Th[illegible] of carcinoma of
the [illegible] phasis is paid to
the [illegible] ion and excision
of t[illegible] the major pelvic
disse[illegible] ritonealization of
the pelvis is shown. The perineal part of the resection is *brief requiring only division and excision of the levator* ani and transverse perineal muscles. The perineal wound is closed except for a small Penrose drain.
Sound: 18 minutes.

Tuesday, September 11, and Thursday, September 13, 2 p.m.

Pyloromyotomy for Infantile Pyloric Stenosis

John L. Madden, St. Clare's Hospital, New York City

The physiologic effects of congenital hypertrophic pyloric stenosis are illustrated by animated diagram, as are the

general features of the Fredet-Weber-Ramstedt operation of pyloromyotomy. A typical case is shown, and the standard surgical procedure is followed, wherein the pyloric tumor is incised longitudinally down to the layer of mucous membrane, which is then free to herniate up through the incised musculature The postoperative course in the patient shown was uneventful
Sound: 14 minutes.

Tuesday and Thursday, 2:14 p.m.

The Technique of Cholecystectomy

Kenneth C. Sawyer, University of Colorado School of Medicine, Denver

This film portrays the steps of an uncomplicated cholecystectomy. The title explains the steps in the procedure.
Silent. 13 minutes

Tuesday and Thursday, 2:27 p.m.

Cholangiojejunostomy with Partial Hepatectomy Following Biliary Obstruction

Philip Thorek, University of Illinois School of Medicine, Chicago

This procedure is applicable to those cases in which the common and/or hepatic ducts have been injured A modification of the Longmire operation is presented in which two anastomoses are shown, one over a T-tube and one over a rubber catheter Step-by-step illustrations of the procedure, roentgenographic studies and postoperative views of the patient are included
Silent. 36 minutes.

Tuesday and Thursday, 3:03 p.m.

Excision Anal Fissure, Fistulectomy and Hemorrhoidectomy with Caudal Anesthesia

Neil Swinton and Urban Eversole, Lahey Clinic, Boston

The technic of excision of an anal fissure, fistulectomy and hemorrhoidectomy are demonstrated Caudal anesthesia is used The film is amplified with illustrations
Silent. 23 minutes

Tuesday and Thursday, 3:26 p.m.

Cyst of the Urachus

Norman O'Neill, University of Southern California School of Medicine, Los Angeles

This film demonstrates the removal of a large urachal cyst. Its dissection in the abdominal wall into which the cyst had become imbedded is carefully shown. The specimen and its contents are depicted.
Silent. 12 minutes.

Tuesday and Thursday, 3:38 p.m.

Surgical Approaches to the Knee Joint

LeRoy C. Abbott, San Francisco, California; Veterans Administration, Washington, D. C.

Animated diagrams show the anatomy of the anterior and posterior aspects of the knee joint. Operations employing approaches to the anterior and posterior aspects, and to the medial and lateral semilunar cartilages are shown Each is recapitulated in animation
Sound· 39 minutes.

Tuesday and Thursday, 4:17 p.m.

Splenorenal Anastomosis

Louis M. Rousselot, New York College of Medicine, New York

The anastomosis of the splenic vein to the renal vein for portal hypertension is demonstrated Illustrations amplify the film Physiology and anatomy involved are clearly described
Sound. 19 minutes

Tuesday and Thursday, 4:36 p.m.

Crushing Injuries of the Thorax: the Treatment of Hemopneumothorax by Temporary Closed Suction Drainage and Pulmonary Decortication

Howard K. Gray, Mayo Clinic, Rochester

Pulmonary decortication is carried out by means of the "cross-hatch" method of peel The use of temporary closed suction drainage is depicted.
Silent: 18 minutes

The Eighth International Assembly
of the
International College of Surgeons
will be held in Madrid, Spain
May 20-24, 1952

PREMIERE OF FILM FORUM

PHILIP THOREK, M. D., *Chairman*

Monday Evening, September 10, 1951

8 to 10 P.M.

Grand Ballroom, Palmer House

The premiere of THE FILM FORUM will be presented, in which four outstanding surgeons will exhibit their films. Each surgeon will comment on his film during its showing; this will be followed by a general discussion and question period.

Louis A. Buie, M.D., Mayo Clinic, Rochester—Moderator

8:00 p.m. to 8:30 p.m.

Harry E. Bacon, M.D., Temple University, Philadelphia
"The Technic of Abdominoperineal Proctosigmoidectomy Without Colostomy and With Preservation of the Sphincter Musculature"

8:30 p.m. to 9:00 p.m.

Lester R. Dragstedt, M.D., University of Chicago
"Supradiaphragmatic Gastric Vagotomy for Peptic Ulcer — The Abdominal Approach."

9:00 p.m. to 9:30 p.m.

Samuel F. Marshall, M.D., Lahey Clinic, Boston
"Gastric Resection for Postbulbar Ulcer"

9:30 p.m. to 10:00 p.m.

Willis J. Potts, M.D., Northwestern University, Chicago
"Surgical Division of Patent Ductus Arteriosus"

In Memoriam

CLIFFORD BELL LULL

M.D., F.A.C.S., F.I.C.S.

Dr. Clifford Bell Lull, prominent Philadelphia obstetrician and gynecologist, died on July 6 after a brief illness. He was 57 years old. In 1915 Dr. Lull was graduated from the Jefferson Medical College, where, from 1941 to 1946, he served as clinical professor of obstetrics. He had served his internship at the Jefferson Hospital. Dr. Lull was director of the division of obstetrics and gynecology at the Philadelphia Lying-In Hospital, chief of staff at the Delaware County Hospital and consultant in obstetrics and gynecology at the Philadelphia General Hospital. He was an associate examiner of the American Board of Obstetrics and Gynecology and a member of the editorial staff of The Digest of Treatment. The author of numerous medical articles and of two books on obstetrics ("Management of Obstetric Complications" and co-author of "Control of Pain in Childbirth"), Dr. Lull emphasized the importance of education of women to the need of adequate prenatal care, this care being a vital factor in the reduction of mortality in childbirth.

Dr. Lull was greatly honored by all who knew him, not only for his skill and wisdom in his profession but for the human qualities that so distinguished his career. In the various organized groups to which he belonged, he made his membership significant and memorable.

Dr. Lull was a member of the following medical and surgical societies: the American Medical Association, the Pennsylvania State Medical Society, the Philadelphia County Medical Society, the Philadelphia Obstetrical Society (past president), the Philadelphia College of Physicians, the American Gynecological and Obstetrical Travel Club, the Washington Gynecological Society, the American Association of Obstetric, Gynecologic and Abdominal Surgeons, the American College of Surgeons and the International College of Surgeons, serving effectively on the Qualifications Board of Surgery in obstetrics and gynecology. The officers and members of the International College of Surgeons extend their warmest sympathy to the bereaved.

RAYMOND JAMES MURPHY

M.D., F.I.C.S.

Recently Dr. Raymond James Murphy died in Chicago at the age of 53. Dr. Murphy took his academic training at the University of Chicago, received his medical degree cum laude from Loyola University and, from time to time, pursued postgraduate studies at the Cook County Hospital and the Cook County Postgraduate Medical School. He served his internship at the John B. Murphy Hospital. Dr. Murphy was at one time chairman of the staff of the John B. Murphy Hospital (now closed). He served as attending surgeon at the Columbus Memorial and Frank Cuneo Hospitals and on the Courtesy Staff of the Illinois Masonic Hospital. In 1932 Dr. Murphy taught operative surgery at Loyola University.

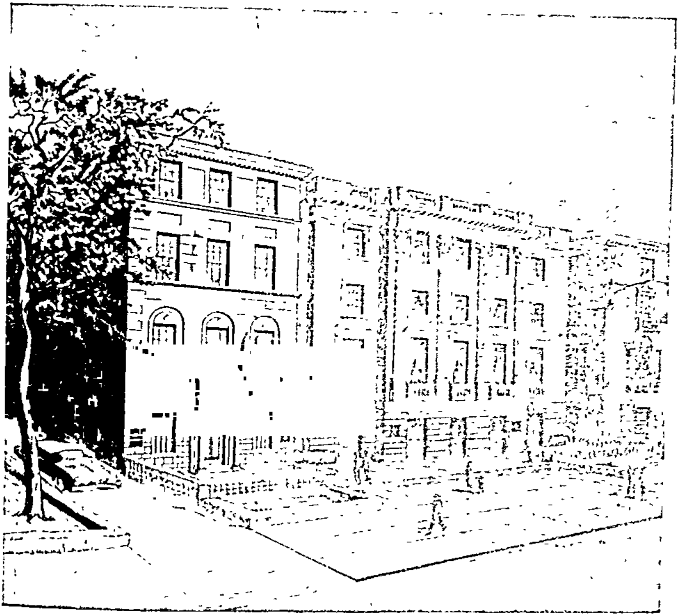
A fellow of the International College of Surgeons, Dr. Murphy was also a member of the American Medical Association, the Illinois State Medical Society and the Chicago Medical Society (North Shore branch).

FREDERICK KNOWLES

M.D., F.I.C.S.

Dr. Frederick Knowles of New York City died recently at the age of 76, after a long and fruitful career. Dr. Knowles received his preliminary education from public schools in New York City and from gymnasia in Vienna, Austria. His medical degree he received from the College of Physicians and Surgeons of Columbia University. Dr. Knowles served on the surgical staff of the Presbyterian Hospital and the New York Surgical Clinic and maintained courtesy privileges at St. Luke's Hospital, the Flower-Fifth Avenue Hospital and the Lenox Hill Hospital, all in New York City. During World War I, Dr. Knowles taught anatomy and surgery at the Chattanooga Medical College.

In addition to holding a fellowship in the International College of Surgeons, Dr. Knowles was a member of the American Medical Association, the New York County Medical Association and the Association of Military Surgeons.



HOME OF THE
INTERNATIONAL COLLEGE OF SURGEONS

and the

UNITED STATES CHAPTER

1516 - 1526 Lake Shore Drive
Chicago 10, Illinois

Assembly Information

HOTEL RESERVATIONS: Write to:
Housing Division,
The Chicago Convention Bureau, Inc.,
33 N. La Salle St., Chicago 2, Illinois.

REGISTRATION: Sunday 2:00 p.m. through Thursday, 3:00 p.m., September 9-13, Palmer House, Chicago.
Advance registration (on Sunday) will save your time.
Admission by badge only to all scientific Assemblies, section meetings, and to the exhibits. Present your I. C. of S. membership card to expedite registration. Registration fee, $5.00.
Bona fide doctors of medicine serving as residents and interns, if vouched for by written card or letter by the superintendent of their hospital or by an officer of the College, will be registered as guests. Please present credentials at Registration Desk.

BANQUET: Grand Ballroom, Palmer House, Wednesday, September 12. Tickets may be purchased at the Registration Desk.

CONVOCATION: Thursday evening, September 13, at the Civic Opera House. Tickets available at Registration Desk for members of the International College of Surgeons, all registrants, their families and guests **(no admission fee).**

MEMBERSHIP INFORMATION, MEDALLIONS and the JOURNAL of the International College of Surgeons at Booths 55 and 56, Exhibit Floor.

PRESS and International College of Surgeons' office (Exhibit Floor).

ASSEMBLY PROGRAM: Papers: Grand Ballroom, Palmer House

SECTION MEETINGS: Orthopedic; Plastic, Ophthalmology and Otorhinolaryngology; Urology; Obstetrics and Gynecology; Occupational Surgery. Please consult your program (obtainable at the Registration Desk).

SCIENTIFIC AND TECHNICAL EXHIBITS: Exhibit Floor.

MOTION PICTURES: Modern surgical techniques will be presented in the Scientific Exhibit Hall by Davis & Geck, Inc., Brooklyn, N. Y., in addition to the regular film program. The films will show continuously on Monday, Tuesday, Wednesday, Thursday, September 10-13, from 10:00 a.m. to 4:30 p.m.

SURGICAL FILM FORUM: Monday evening, September 10, in the Grand Ballroom, Palmer House.

COLLEGE INTERNATIONAL DES CHIRURGIENS
GENEVE 35

FOUNDED BY DR. MAX THOREK

The Journal of the International College of Surgeons

FOUNDED IN GENEVA, SWITZERLAND, 1935 - INCORPORATED IN WASHINGTON, D. C., 1940

Vol. XVI SEPTEMBER, 1951 No. 3

Original Articles

Carcinoid Tumors of the Rectum

Report of Seven Cases

MICHAEL C. TAVENNER, M.D., HARRY E. BACON, M.D., F.A.C.S., F.I.C.S.
AND AUGUSTIN R. PEALE, M.D.
PHILADELPHIA

CARCINOID tumors are interesting because of their gross and histopathologic characteristics, which have led many investigators to regard them as benign and others to confuse them with carcinoma. Carcinoid tumors of the gastrointestinal tract and especially of the appendix have been widely reported since Lubarsch described 2 ileal carcinoids in 1888. Records of rectal carcinoids, however, have been conspicuously absent until recent years. We reviewed the literature and found 71 cases of carcinoid tumors of the rectum. In 7 of these cases there were metastases. We present 7 additional cases, in 1 of which metastases had occurred. Papers in the past have dealt almost exclusively with the pathologic aspects of carcinoid tumors. In addition to the pathologic survey, we wish to stress the clinical aspects, i.e., diagnosis, treatment and especially follow-ups, of the cases presented in this paper.

Review of the Literature.—Merling, in 1836, made what is thought to be the first report of a "primary carcinomatous-type lesion" of the appendix. He presented no microscopic evidence, but the general description of the tumor, together with the fact that carcinoid tumor of the appendix is the most common tumor of that organ, points to the possibility that the neoplasm was a carcinoid.

The first report of a "primary carcinomatous-type lesion" of the appendix or small intestine which is complete enough to be of value was presented by Lubarsch in 1888. Lubarsch described 2 ileal carcinoids which were multiple, small and nonmetastasizing. These tumors consisted of masses of cells that neither assumed glandular arrangements nor possessed any similarity to the normal intestinal mucosa.

From the Department of Pathology, Temple University School of Medicine, in partial fulfillment of requirements for the degree of Master of Science in Proctology.

Submitted for publication July 24, 1951.

Lubarsch expressed the opinion that the tumors were a type of carcinoma, and named them "primary carcinoma". He concluded that, although the tumors were epithelial in origin and traceable to the crypts of Lieberkuhn, they were distinctly different from adenocarcinoma and should be considered a distinct entity.

Oberndorfer originated the term "carcinoid" in a paper presented at the meeting of the German Pathological Society in 1907. He justified the new name by his description of the tumor as benign, nonmetastatic, slow in growth and small. He also advocated that this tumor be distinguished from carcinoma but did not offer a new theory of its origin. Oberndorfer supported Trappe's theory that the tumors originated from pancreatic rests. In 1909 Burkhardt investigated a group of carcinoid tumors of the small intestine and distinguished them from adenomyomas and pancreatic rests. Contrary to the conception of Oberndorfer, Burkhardt supported Bunting, in whose opinion these small-celled tumors resembled the basal cell carcinomas of Krompecher. In 1910 Toeniessien advanced the theory that carcinoids were the outgrowth of submucosal rests. He suggested that the tumors were glands of internal secretion, and also pointed out the similarity between the nests of carcinoid cells and the islands of Langerhans. Saltykow further developed the idea that carcinoids were the outgrowth of pancreatic rests, but he held that only the islands of Langerhans were produced in the growth of the tumor. Huebschmann suggested that carcinoids, because of their yellow color, had their origin in the "gelben zellen" of the intestinal mucosa. Ehrlich's hypothesis of origin stated that this type of tumor arose from Auerbach's plexus; he called it "immature, sympathetic neurocytoma". In the opinion of Aschoff the tumors were nevi of the mucous membrane. He pointed out that they might be malignant. Danisch offered the theory that carcinoids had origin in the celiac ganglion, while Primrose referred to them as embryomas. The latter pointed out that the simultaneous existence of tuberculosis and the carcinoid tumor was more than mere coincidence, and that tuberculosis may, in many instances, play an important part in the production of the tumor.

Kultschitzky, in his investigation of the intestinal mucosa, identified a new type of cell in 1897, which is now variously known as the Kultschitzky, basigranular, chromaffin or enterochrome cell. Schmidt, one of the early investigators of carcinoid tumors, believed that the tumors had their origin in the Kultschitzky cell but was unable to offer conclusive proof of this theory. Gosset and Masson stained the carcinoid cells with ammoniac silver nitrate and showed that the intracytoplasmic granules of the tumor cells had the ability to reduce the silver ion to free silver. This staining technic proved conclusively Schmidt's theory that carcinoid tumors have their origin in the Kultschitzky cell. This theory of origin is the one generally accepted today. Popoff suggested that the argentaffin properties of these cells were stages in the rejuvenation of functionally exhausted, refractory mucus cells, and that these cells continued to form from the mucus-secreting cells.

In 1925 Forbus made an extensive study of carcinoids in which he evaluated these tumors. From the many hypotheses concerning them he presented the characteristics and origin of carcinoids as they are generally known today, with one exception; in his opinion, they were benign.

Incidence and Sites.—Carcinoid tumors may occur wherever the Kultschitzky cell is present, i.e., throughout the gastrointestinal tract. Ariel observed in a series of 2,373 neoplasms of the entire gastrointestinal tract, from both surgical and autopsy material, that only 1.3 per cent were carcinoid tumors. These tumors occur most frequently in the region of the ileocecal valve, especially the appendix, the distal portion of the ileum and occasionally the cecum. Ashworth and Wallace reported a series of carcinoids found in unusual places (other than the ileocecal area) as follows: rectum, 5; cecum, 2; sigmoid, 2; stomach, 6; gallbladder, 2;

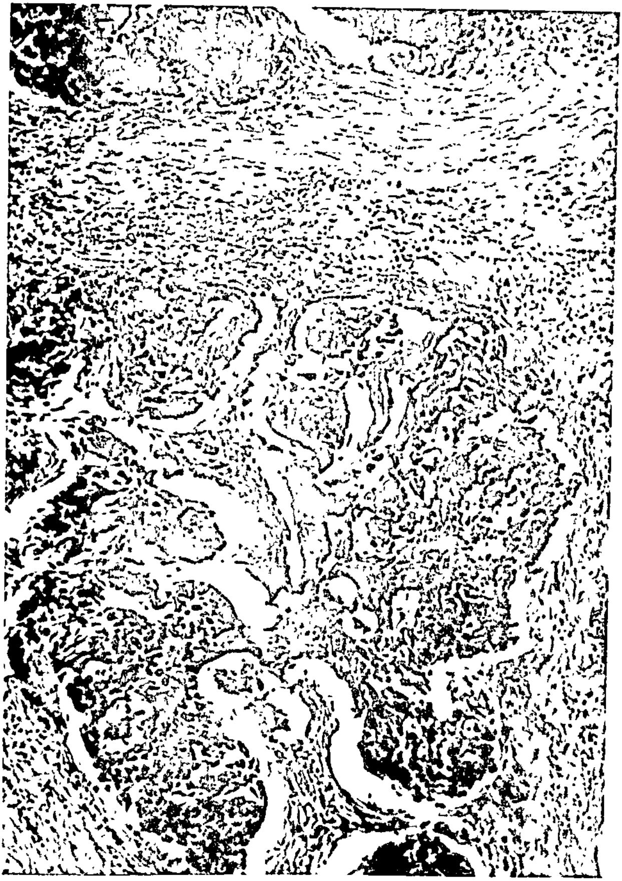


Fig. 1. (Case 1).—Section taken at base of the ulcer, deep within bowel wall. Pattern and arrangement of the tumor cells appear entirely compatible with diagnosis of carcinoid tumor. Inflammatory cells surround entire tumor aggregations.

mesentery, 2; undetermined but having their origin from the colon, 2.

With the exception of those removed from the appendix, carcinoid tumors are most frequent in persons over the age of 40. The patient's average age for the removal of appendical carcinoids is twenty-five years; the earlier detection of these tumors is due to the appearance of symptoms of appendicitis, with resultant appendectomy. Those patients who have metastases from carcinoid tumors are usually between 50 and 70 years of age. The tumors occur slightly more frequently in the female patient than in the male.

Metastases and Malignancy. — The benign nature of these tumors has been stressed in the past; however, it is now recognized that carcinoid tumors may produce clinical symptoms and assume all the characteristics of highly malignant neoplasms. Ritchie and Stafford found that of 332 cases of carcinoid tumors from all sites reported in the literature up to 1944, 126, or 37.9 per cent, had shown metastases. In a series of 68 metastasizing tumors of the gastrointestinal tract collected by Miller and Herrmann the primary sites were: stomach, 1; jejunum, 2; ileum, 39; small bowel unspecified, 9; appendix, 14, and colon, 3. In Raiford's series of 29 cases of carcinoid tumors, all of those occurring in the stomach and colon were malignant, while only 1 was malignant in the group of 17 occurring in the appendix. Horn found 9 out of a group of 19 carcinoids of the colon associated with metastases, an incidence of 47.2 per cent. There have been 71 carcinoid tumors of the rectum reported, with only 7 of them associated with metastases. The incidence of malignancy is 10.6 per cent. Compare this with the 37.9 per cent incidence of metastases of carcinoids from all sites, as collected by Ritchie and Stafford. It is obvious that rectal carcinoids are less frequently associated with metastases than those from any other site except the appendix.

In metastasizing, the spread of carcinoid of the rectum is through the bowel wall to the regional nodes, thence to the liver, viscera and occasionally elsewhere. The majority of carcinoid tumors of the rectum are slow growing, but there are occasional reports of rapid, general metastases from these tumors. Pearson and Fitzgerald have reported 2 deaths from generalized metastases within two and one-half years after the onset of symptoms from carcinoid tumors of the rectum. Horn described a patient with a similar rectal carcinoid who lived only three months after the onset of symptoms. We encountered a case (Case 1) in which there were generalized metastases, the patient surviving only twenty-nine and one-half months following onset of symptoms.

Pathologic Picture.—Grossly these tumors are usually small, firm, freely movable submucosal nodules, the cut surfaces of which are smooth and frequently homogeneously yellow. Some have been described as tan, buff, gray, white, brown or pinkish-white.

Histologically the carcinoid tumor reveals a small epithelial cell with a round or oval nucleus, which has a fine, homogeneous stippling of chromatin and a very distinct nuclear membrane. The cytoplasm is eosinophilic and homogeneous. There are small vacuoles and fine punctate granules throughout the cytoplasm, and the cell membrane is often indistinct or absent. The three cell types, columnar, palisade and polygonal, form nests, cords and plaques. Often they form rosettes or pseudoglands made up, usually, of columnar cells. A true lumen is not present, but there is a homogeneous, hyalin-like eosinophilic globule in the center of the pseudogland, probably due to central necrosis which gives the pattern the rosette appearance. The solid and pseudogland arrangement may be found within the same section; however, some carcinoid tumors show a preponderance of one type of pattern. In sections where the neoplasm infiltrates the musculature the solid sheets of cells assume a cordlike appearance.

The stroma presents a characteristic appearance of hyperplastic connective tissue and smooth muscle fibers. Masson thought that the fibromuscular hyperplasia resulted from the action of the tumor cells on preexisting muscle and connective tissue. Bailey stated that the argentaffinoma has the property of stimulating the production of elastic tissue, a characteristic that is rare in tumors. It

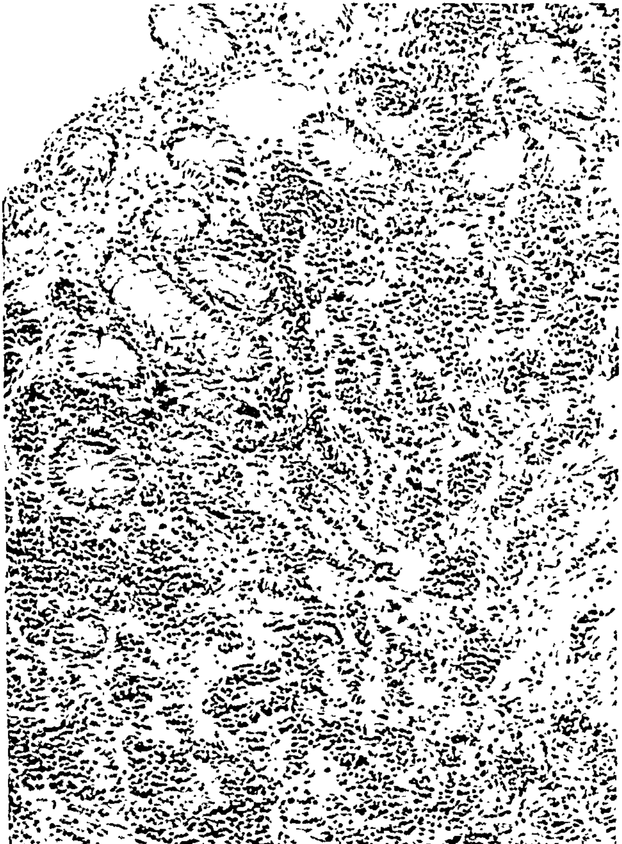


Fig. 2 (Case 2).—Bowel mucosal glands at one corner serve to identify tissue. Between these glands, perhaps arising from them, are nests and cords of uniform basal-looking cells. Tiny tumor collections are usually solid, although there is attempt at alveolar formation. Stromal tissue is distinct.

was recognized by Masson that carcinoids of the rectum exhibit columns of cells which are characteristically narrow and interwoven, giving the appearance described by Stout as resembling carelessly coiled festoons of ribbons. There are other cell patterns interwoven in these festoons that are less outstanding.

Many investigators have noted that it is extremely difficult to determine the degree of malignancy of a carcinoid tumor by the usual cytologic criteria. The cell characteristics of a nonmetastasizing tumor of the appendix and those of a metastasizing tumor of the colon are notoriously similar. Most pathologists consider all carcinoids malignant but slow growing.

In 1905 Schmidt called attention to the chromaffin nature of the protoplasm of the carcinoid. By the work of Gosset and Masson, however, the histogenesis of carcinoid tumors was more fully explained. By the use of a special histologic staining technic they demonstrated that the tumors originate in cells located in the depths of the crypts of Lieberkühn throughout the gastrointestinal tract. Some of these cells, described by Kultschitzky in his studies of normal intestinal mucosa, extend from the basement membrane to the lumen, while others remain without contact with the lumen. All of the tumors studied by Gosset and Masson contained granules capable of reducing the silver ions of ammoniacal silver nitrate to free silver. In their microscopic analysis of the argentaffin cells the following observations were made: 1. The argentaffin granules were always located between the basement membrane and the nucleus. 2. The vacuoles in the cytoplasm were explained as a possible elaboration of the argentaffin granules. 3. The cells were capable of proliferation to form organoid tissue. 4. The argentaffin cells were classified as identical with the chromaffin tissue of the paraganglia, which also contains argentaffin granules. Later the large quantities of lipoids in carcinoid cells were found to be the important point of differentiation between these two types of chromaffin tissue. It can be demonstrated by the use of polarized light and staining for fat lecithin that the cytoplasm of carcinoids contains cholesterol.

The name "argentaffin tumor", originated by Gosset and Masson, has been used by many investigators; however, it is now known that all carcinoids do not show argentaffin properties. Of particular interest are carcinoids of the rectum, which often do not reduce silver salts. Stout pointed out this fact when he noted that three otherwise typical carcinoids of the rectum did not reduce ammoniacal silver nitrate and another presented only a slight browning of the granules. He explained this failure of the cells to reduce the silver salts by assuming the absence of enteromin, which, according to Erspamer, is necessary for reduction of the salts. Erspamer referred to these cells as "enterochromaffin" and proposed four phases in which the cell might exist. The typical "enterochromaffin cell" is distinguished by a chemical compound which Erspamer called enteromin (not yet isolated in pure form) that gives a positive reaction to diazo dyes, reduces silver salts and shows fluorescence when examined under ultraviolet light. Another phase was described as a clear, nonargentaphilic, pre-enterochrome cell that contained no argentaffin granules. A third phase was classified as a pre-enterochrome, acidophilic, argentophic cell that contains acidophilic granules which are capable of taking up silver salts but do not reduce them, owing to the absence of the compound enteromin. The absence of enteromin in this phase precluded the diazo reaction as well as fluorescent properties. The last phase was an empty enterochrome cell in which the granules have been emptied of enteromin and do not show the characteristic properties of the typical cell. Several investigators have suggested tentative formulas for the compound that gives the argentaffin granules their characteristic property: Erspamer thought that it was an orthodiphenol with a not too complex side chain; Jacobson and Simpson stated that the granules contain both a pterin and a carbohydrate; Gomori believed that the typical histochemical reactions of the enterochromaffin cell are due to the presence of a derivative of resorcinol.

The presence of more than one phase of the carcinoid cell has been demonstrated adequately by the fact that many of the rectal carcinoids do not reduce

Outline of Clinical Cases

Case	Patient	Age	Sex	Signs, Symptoms, Comment	Metastases	Follow-up
1	J.M.	45	M	Rectal pain, protrusion, bleeding; large fixed rectal mass; gross diagnosis carcinoma; perineal prostatectomy, 10/13/40.	to liver and abdominal viscera	Did poorly; cystitic; urinary obstruction; abd. lap. 8/13/42 revealed recurrence and metastases; died 1/14/43.
2	H.G.	50	F	Anal burning; fissure-in-ano, hemorrhoids; hemorrhoidectomy and excision of small tumor at 9 cm., 6/22/45.	No	Periodic examinations; no recurrence.
3	A.McC.	59	F	No rectal complaints; small rectal tumor at 8 cm. palpated during routine examination (physical); removed 8/14/47.	No	Adenocarcinoma of sigmoid colon resected June 1949
4	J.J.	39	F	Anal burning and bleeding; diarrhea; hemorrhoidectomy and excision of small tumor at 5 cm.; *5/9/49 anorectal pain; bleeding*; protrusion.	No	Periodic examinations; no recurrence
5	A.R.	50	F	Constipation; bleeding; multiple rectal adenomas; hemorrhoidectomy *and fulguration of adenomas*; excision of small tumor at 7 sm. on 8/1/49.	No	Periodic examinations; no recurrence
6	W.K.	37	M	No symptoms; small rectal tumor observed on physical examination; abdominoperitoneal proctosigmoidectomy on 7/13/50.	No	Recent examinations; no recurrence
7	M.A.	39	F		No	Recent *examinations*; no recurrence

ammoniacal silver nitrate, but the exact chemical picture of the several phases remains to be proved.

Some carcinoids have been found in which mucus-secreting cells were associated with the granular cells (Cordier; Siburg). Clara has shown that these Kultschitzky or enterochrome cells are derived in the human embryo from undifferentiated *intestinal epithelium. These facts* lend support to Popoff's theory that the cells of the carcinoid tumor are typical *mucosal epithelial cells in an exhausted* state. He regarded the argentaffin properties as transitory; present, that is, only when the cell was in a refractory, rejuvenatory state.

Diagnosis and Treatment.—The rectal carcinoid is usually small (0.5 to 1.5 cm. in diameter), firm, nontender and sessile. It is frequently found on the anterior wall of the rectum. It is mobile, and the mucosa slides over it readily. Some rectal carcinoids are polypoid, and multiple tumors are sometimes encountered. These small tumors are asymptomatic and are detected during routine physical examination or proctosigmoidoscopic examination of patients suffering from anorectal disease. A carcinoid will present a picture similar to that of adenocarcinoma when it is large, fixed, ulcerated, fungating, annular or obstructive. When the tumor is large it brings about bleeding and change in bowel habit.

Since Merling described the first carcinoid tumor over a hundred years ago and *called it carcinoma, these two neoplasms* have been confused frequently. Large, ulcerated, fungating, indurated carcinoid lesions grossly resemble adenocarcinoma, but the microscopic picture is also confused with that of small-celled carcinoma. The tumor in Case 1 in the present series was grossly described by the surgeon as *rectal adenocarcinoma*; *microscopically it* was diagnosed by the pathologist as a carcinoid of the rectum. The tumor in Case 2 was diagnosed histologically as adenocarcinoma of the rectum. Later study and re-evaluation revealed it to be a carcinoid tumor. In Case 7 the pathologist had difficulty in differentiating the carcinoid from small-celled, scirrhous adenocarcinoma of the rectum.

Rectal carcinoma must be differentiated from the great array of submucosal nodules. Jackman observed 4 carcinoids in his group of 87 rectal nodules (4.6 per cent). Biopsy of all lesions is mandatory, since this is the only means of insuring a correct diagnosis. Small tumors should be excised widely to insure complete removal. Should they be histologically diagnosed as carcinoid tumor, the patient should be thoroughly examined periodically; the examination should include proctosigmoidoscopic study and a barium enema, because the tumor may recur or there may be multiple primary foci elsewhere in the gastrointestinal tract. It has been stated that one-third of all carcinoids are multiple, primary tumors. Of a group of carcinoids discovered at autopsy, 23 per cent showed a second malignant tumor of a noncarcinoid type.

Should the small submucosal rectal carcinoid recur, radical resection of the rectum is indicated. Radical resection is recommended when multiple carcinoids of the rectum are present or when the tumor is large, annular or obstructive.

Available Reports.—Rigdon and Fletcher reviewed the literature on carcinoid tumors of the rectum up to 1946 and noted only 14 cases. In 1948 Pearson and Fitzgerald searched the literature, found 29 cases, and added 3 cases of their own, 2 with metastases. Horn listed 56 cases of carcinoid of the rectum, including 6 cases of his own. Pearson and Fitzgerald described 7 additional cases in 1949. Wilson reported a case the same year. Shepard and his associates cited 2 cases in 1951. In addition, Hines reported 3 cases, while Mayo and McKee detailed 2. This brings the total to 71. In 7 of these 66 cases metastases were observed (Horn; Pearson and Fitzgerald; Wilson). We present 7 cases of rectal carcinoids, one with generalized abdominal metastases.

REPORT OF CASES

CASE 1.—J. M., a 45-year-old white man, was admitted to the hospital on Oct. 13, 1940, complaining of dull, aching rectal pain of six weeks' duration, associated with rectal bleeding (bright red blood) when straining at stool. There was anal protrusion. The bowel habits were regular, and the stools were formed.

Three months prior to admission the patient was struck in the abdomen by a truck. He underwent an abdominal laparotomy at another hospital. The viscera were examined closely. There was no perforation or lesion, but there was a small amount of free blood in the peritoneal cavity. During physical examination at the hospital a large rectal mass was discovered. The patient was advised to undergo abdominoperitoneal resection, which he refused. He was discharged improved.

The family history was noncontributory. Physical examination at this hospital gave essentially normal results, though proctologic examination revealed a large, indurated, cauliflower-like mass which extended from the right posterolateral wall to the left anterior wall. One-half the circumference of the rectum was involved. The mass was nodular and fixed 7 cm. above the anal verge. There was an abdominal surgical scar in good condition. The laboratory data were within normal limits.

A perineal proctosigmoidectomy was performed on October 13. It was observed that the rounded, ulcerated growth had a diameter of approximately 3 cm. There were raised borders and a shallow, flat, ulcerated surface. Enlarged lymph nodes were not noticed. The patient was discharged on October 31, after an uneventful postoperative course.

Pathologic Report.—Gross: The specimen consisted of a piece of rectosigmoid colon approximately 18 cm. in length. At a distance of 5 cm. above the anorectal line there was an annular ulcer measuring 3 cm. in its greatest diameter. The edges were moderately raised, and the ulcer perforated the complete thickness of the intestinal wall. Its cut surfaces were firm and apparently neoplastic. No lymph glands were palpable.

Microscopic: The cytologic character was interesting and somewhat unusual. The tumor cells were fairly uniform in size and were grouped for the most part as solid cohesive nests, although there was a definite tendency to lumen formation. The nuclei were small

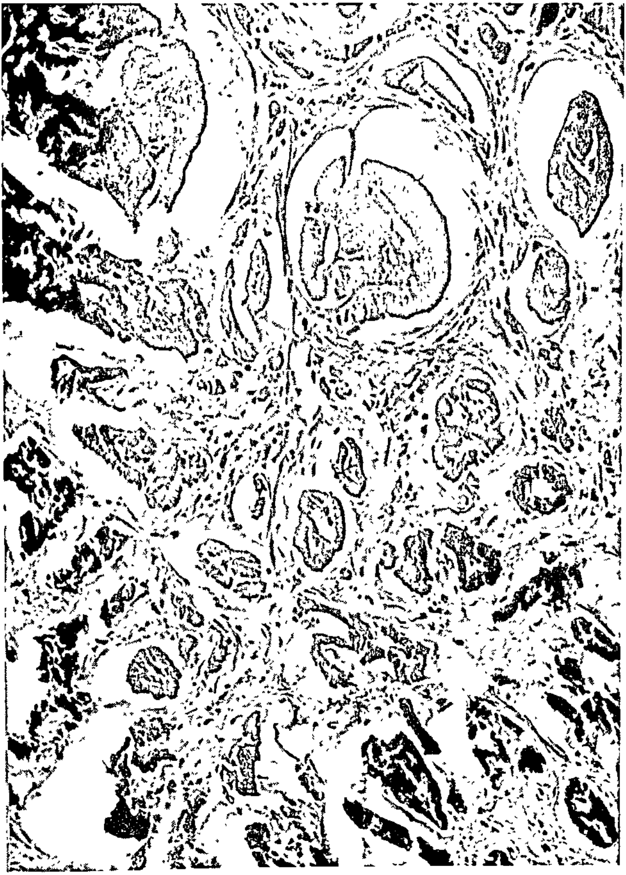


Fig. 3 (Case 3).—Tumor characteristic of the rectal carcinoids, exhibiting typical loose, well vascularized stroma and coiled ribbon-like configuration of neoplastic cells. There is alveolar formation. Nuclei are small, round and dark. Cytoplasm is variable but usually present; it is pale, granular or vacuolated.

and round; frequently they were hyperchromatic. The cytoplasm was relatively scant, pale and indistinct. There was a characteristic alveolar septate arrangement; the septums varied in thickness. There was no tendency to glandular proliferation or mucin production. The cells were polygonal or cuboidal, but never columnar. The morphologic nature and pattern of the tumor fitted the description of a carcinoid, although

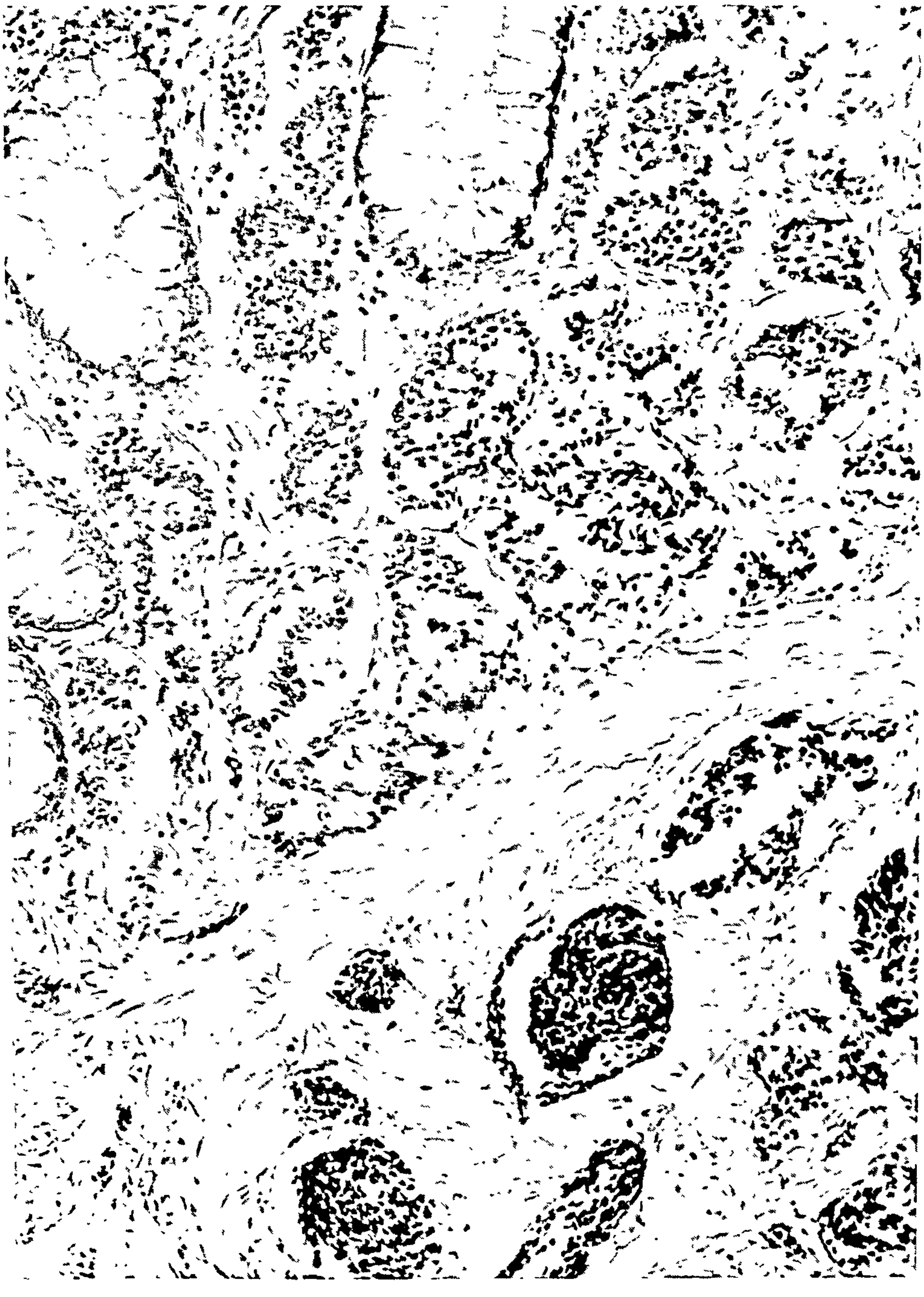


Fig. 4 (Case 4).—Section showing groups of tumor cells in mucosal and submucosal layers. Some are dark-staining; others are more characteristic of cercinoid tumor cells of appendix. The latter are pale and cuboidal or columnar in appearance and show alveolar or pseudo-rosette formation.

its gross ulcerated character and its deep invasion were not the usual features of rectal carcinoid. However, the opinion of the pathologist was that this tumor was a carcinoid. Further studies with mucicarmine and silver stains gave negative results.

Diagnosis.—The diagnosis was carcinoid tumor of the rectum.

Follow-up.—The patient progressed poorly after his discharge and was readmitted several times for chronic urinary obstruction and infection. On Aug. 11, 1942, he was ad-

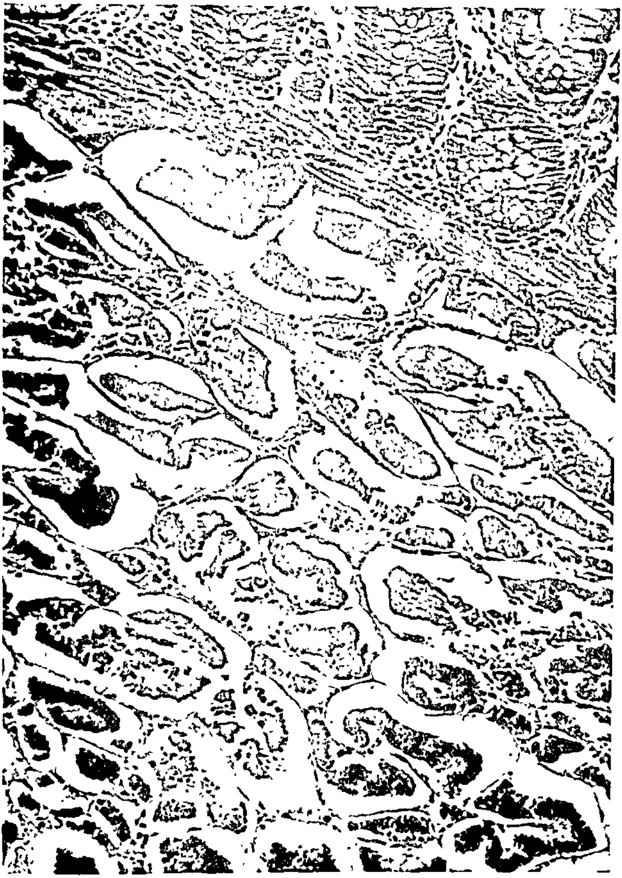


Fig. 5 (Case 5).—Note intact mucous membrane and muscularis mucosa on one surface. Beneath latter layer are small groups of uniform cells, accompanied by a fine septate stroma. Festooned ribbon-like pattern described for these rectal growths is apparent in some areas.

mitted to the proctologic service, complaining of abdominal pain and constipation. On August 13 an abdominal laparotomy was performed. The liver showed metastatic nodules. There were implants on the bladder, the large bowel and the peritoneum, apparently from a recurrence in the pelvis. The patient was considered inoperable and was discharged, his condition unchanged, on August 27. Unfortunately no biopsy was done. He was readmitted on several other occasions. On the last admission, Jan. 8, 1943, the signs and symptoms were ascites, jaundice, cachexia, abdominal pain, an enlarged liver and marked abdominal distention. He died on January 14. Permission for autopsy was not granted.

Comment.—This patient lived twenty-nine and one-half months after the onset of symptoms and twenty-seven months after operation for a large, fixed, ulcerated, low-lying rectal carcinoid tumor. It seems reasonable to assume that the large carcinoid tumor was the lesion responsible for the gross metastases and the patient's death.

CASE 2.—H. G., a 50-year-old white woman, was admitted to the hospital on June 15, 1945, complaining of anal irritation of two weeks' duration, noted especially when bathing. A fissure-in-ano had been removed in another hospital two years previously. The patient had no bleeding, no weight loss and no change from normal bowel habits. Her mother had diabetes.

Physical examination gave essentially normal results, but during proctosigmoidoscopic examination a small pocket or crypt was noticed in the left posterolateral area at the anorectal line. Hemorrhoidal tissue was noticed in the anterior and left lateral areas. There were 5 hypertrophied papillae which were definitely but not extremely enlarged. At a distance of 9 cm. on the left lateral of the rectum there was a small process, pproximately the size of a pea, with an umbilicated surface. It appeared to be benign. The summit was fairly granular and ulcerated. The remainder of the bowel appeared normal. There was an 8.5 cm. McBurney scar in the right lower abdominal quadrant. Biopsy of the small tumor on June 15 was reported as showing adenocarcinoma. The laboratory data were within normal limits.

On June 22 a hemorrhoidectomy, papillectomy and removal of the tumor were performed. The tumor was excised widely and the defect in the rectal wall was repaired with No. 00 chromic catg sutures. The
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cuboidal cells, whose nuclei were prominent and uniform and whose cytoplasmic borders were scant and indistinct. There was a definite tendency to lumen formation in some areas, which was interpreted as glandular proliferation. Therefore this tissue was considered representative of an adenocarcinoma, although atypical, because of its uniform cellular pattern and the low cuboidal type of cell. Subsequent study of this material revealed the true nature of the pathologic process, so that the original diagnosis of adenocarcinoma was changed to carcinoid. In fact, the typical festooned ribbon appearance emphasized by Stout was quite apparent. Mucicarmine and silver stains gave negative results.

Diagnosis.—The diagnosis was carcinoid of the rectum.

Follow-Up.—This patient has been followed constantly. At periodic intervals sigmoidoscopic examinations have been done. Several barium enemas revealed essentially normal conditions. There has been no recurrence to the time of this writing, six years after the operation.

CASE 3.—A. McC., a 59-year-old white woman, was admitted to the hospital on Aug. 6, 1947, to the neurosurgical service, complaining of shooting pains in the lower part of the back since May 27. The first pain was excruciating and appeared when she straightened up suddenly while washing clothes. There was a residual constant pain in the lower part of the back. There were absolutely no symptoms referable to the colon or rectum. The patient underwent a dilatation and curettage in 1937. The family history was not remarkable.

Physical examination showed the patient to be malnourished. The abdomen was difficult to palpate. There was a questionable mass in the left lower quadrant. The ankles were swollen, and there was pitting edema. There was tenderness over the thoracic portion of the spine, but no lumbar or paravertebral tenderness. Rectal examination disclosed a mass on the posterior wall. Sigmoidoscopic examination showed moderate hemorrhoids, several hypertrophied papillae and a pea-sized, mobile tumor on the rectal wall 8 cm. above the anorectal line.

On Aug. 14, a small tumor was removed from the posterior rectal wall. The base was fulgurated. The postoperative course was very good, and she was discharged on August 17.

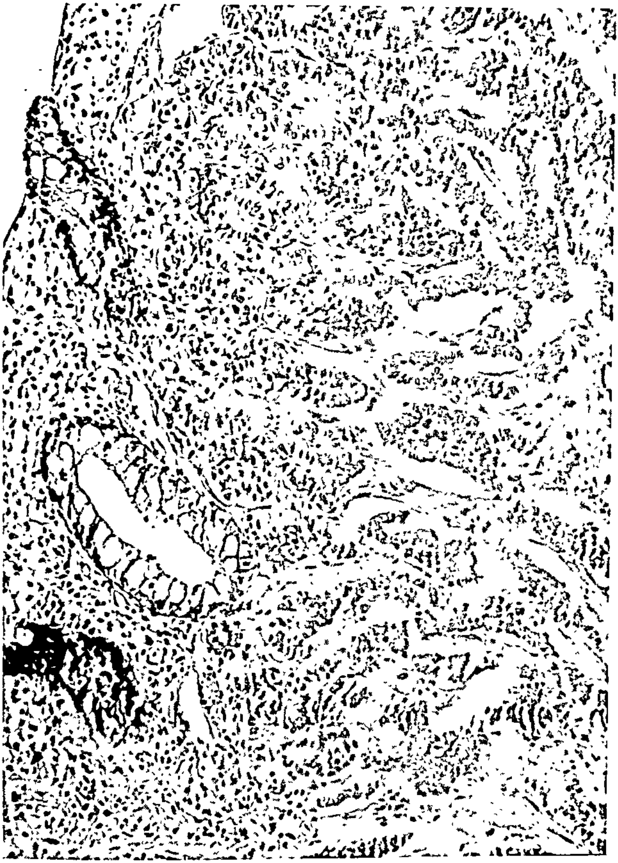

Fig. 6 (Case 6).—Small alveolar, septate groups of uniform, pale cells with round, regular nuclei, make up bulk of this section. Cuboidal or columnar configuration and pseudo-rosette or alveolar formation are evident. Cytoplasm in some areas is abundant and granular or vacuolated.

Pathologic Report.—Gross: A small piece of grayish tissue was received for examination.

Microscopic: The sections of this piece of tissue showed it to be completely covered with rectal mucosa. The submucosa was replaced by a mass of tumor cells. These cells were rather small and quite uniform and lacked the usual characteristics of malignancy. In some areas the cells were in solid aggregates and bore a close resemblance to those seen in carcinoid tumor. In other areas there was a pseudo-acinar arrangement. This laboratory has on some occasions seen carcinoid tumor with the latter arrangement. This lesion must be considered a carcinoid tumor of the rectal tract. Both the mucicarmine and the silver stains gave negative results.

Diagnosis.—This patient eluded us for a time. We recently communicated with her by telephone. At that time she refused to come into the clinic for examination. She stated that she had been operated upon at another hospital after the removal of the rectal tumor at this hospital. A communication from the other hospital stated that she underwent a resection of the sigmoid portion of the colon in June 1949. Diagnosis of the lesion removed was adenocarcinoma. The chart contained no sigmoidoscopic report, but a rectal examination was recorded as revealing no abnormality.

Comment.—A rectal lesion was discovered during the course of a routine examination in a patient with no colonic or rectal symptoms. Subsequent examination at another hospital showed another primary malignant lesion of the colon which, upon resection, proved to be adenocarcinoma.

CASE 4 (H. C. Schneider).—J. J., a 39-year-old white woman, was admitted to the hospital on July 24, 1948, complaining of recurrent anal burning of fifteen years' duration. Associated with this was rectal bleeding. Five months prior to admission the patient had an episode of severe bleeding (bright red blood). She had had diarrhea for ten days before admission, which exaggerated the anal burning. There was a self-replaceable protrusion. The bowel habits were regular and the stools were formed. The patient had undergone appendectomy in the past; had had four normal pregnancies; she had a cardiac condition at the time of admission. The family history was noncontributory, and the laboratory work-up revealed no abnormality.

Physical examination gave essentially normal results. Protosigmoidoscopic examination showed a postanal ulcer; there were skin tags and internal hemorrhoids in all four quadrants. There was a small tumor 0.8 cm. in diameter which was firm, non-tender, sessile and located 1 cm. above the anorectal line in the anterior plane. The patient was obese.

On July 25 a hemorrhoidectomy, excision of the postanal ulcer and excision of the small tumor were performed. The postoperative course was uneventful, and the patient was discharged on July 29.

Pathologic Report.—*Gross:* A piece of firm, pink tissue 0.8 cm. in diameter was received for examination.

Microscopic: There were nests and cords of dark-staining cells embedded in a fibrous stroma. The nuclei were small, round and uniform. The cytoplasm varied in amount and in staining quality. Special stains were not available on this tissue.

Diagnosis.—The diagnosis was carcinoid of the rectum.

Follow-Up.—Periodic examinations, including sigmoidoscopy and barium enemas, have revealed no recurrent or additional pathologic change.

Comment.—A small, solitary carcinoid of the rectum was discovered during proctologic examination for anorectal disease.

CASE 5 (H. C. Schneider).—A. R., a 50-year-old white woman, was admitted to the hospital complaining of aching anorectal pain when standing for any length of time. She had noticed some bright red blood on the toilet tissue at stool during the six months prior to admission. Two months prior to admission she had experienced more severe bleeding. The bowel habits were regular and the stools were formed. The patient had had pneumonia in 1939. Her mother had carcinoma of the skin.

Physical examination gave essentially normal results. Proctoscopic examination showed internal hemorrhoids in all four quadrants and a small, mobile tumor, 0.8 cm. in diameter, 5 cm. above the anal verge. The results of the laboratory work-up were within normal limits.

Hemorrhoidectomy and total excision of the small tumor were performed on May 9, 1949. The postoperative course was very good, and the patient was discharged on May 12.

Pathologic Report.—*Gross:* A soft, tan fragment of tissue 0.7 cm. long was received for examination.

Microscopic: This small nodule of rectal tissue showed groups of tumor cells embedded in the submucosa and penetrating the muscularis mucosa. The cells were uniform in size and shape and had a basal cell structure. They were grouped in pseudo-acinar formation and in a few areas they appeared as solid cords or as festooned ribbons. The tumor collections were separated from one another by thin interlacing fibrous septums. The mucicarmine stain gave negative results, but the silver stain showed spotty argentophilic granules.

Diagnosis.—The diagnosis was carcinoid

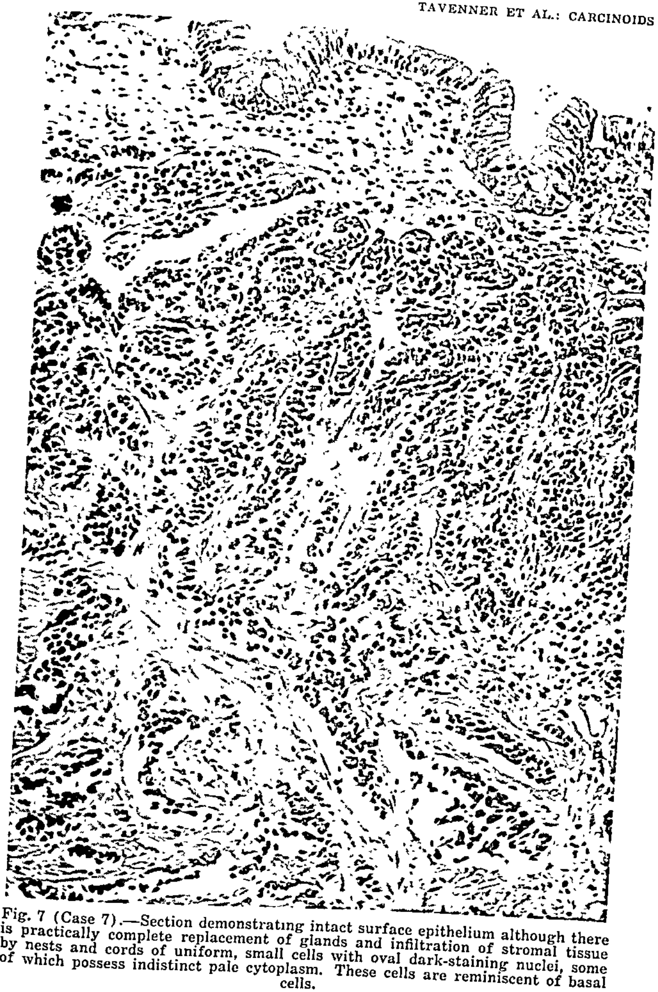

Fig. 7 (Case 7).—Section demonstrating intact surface epithelium although there is practically complete replacement of glands and infiltration of stromal tissue by nests and cords of uniform, small cells with oval dark-staining nuclei, some of which possess indistinct pale cytoplasm. These cells are reminiscent of basal cells.

tumor of the rectum.

Follow-up.—A recent check-up, which included sigmoidoscopic examination and a barium enema, showed no recurrent or other pathologic change.

Comment.—Anorectal symptoms indicated the need for sigmoidoscopic examin[illegible] which resulted in the detection of a [illegible] carcinoid tumor.

CASE 6.—W. K., a [illegible]old white

was admitted to the hospital on July 31, 1949, complaining of constipation and rectal bleeding. Bowel action had been normal until three months prior to admission; at this time the patient had become constipated. It had been necessary to use mineral oil daily. The stools had been narrow and broken up. Defecation was incomplete. During this three-month period he had noticed a small amount of blood covering the outside of the stool. There was dull pressure pain in the rectum preceding defecation. Mild and retractable protrusion was present. There was also mild itching. Weight loss was not evident. The patient's mother had died of diabetes. The results of the laboratory work-up were within normal limits.

Physical examination gave essentially normal results. Proctosigmoidoscopic examination showed internal hemorrhoids, infected crypts and five hypertrophied papillae. There were three adenomas, one 5 cm. above the anal margin, another on the left lateral wall at a distance of 7 cm. and a third on the posterior wall at a distance of 10 cm. A barium enema revealed no pathologic condition above the rectosigmoid.

On August 1, a papillectomy, cryptectomy and hemorrhoidectomy were performed. The polyps were amputated and a small tumor was excised from the right lateral wall. The postoperative course was very good and the patient was discharged on August 4.

Pathologic Report.—Gross: Four pieces of tissue were received for examination, two of which were covered with skin. The largest of these measured 2 by 0.9 cm. On the surface of this specimen there was a small, white node 0.4 cm. in diameter. The other fragments were smaller and were tan.

Microscopic: Sections of this small tumor showed cohesive nests and coral-like strands of cuboidal or columnar cells, whose nuclei were small, round and vesicular and whose cytoplasmic borders, while indistinct, were granular, vacuolated or pale. A prominent, although thin, connective tissue background produced an alveolar septate pattern. Mucicarmine stain gave negative results. Occasional argentophilic granules were encountered.

Diagnosis.—The diagnosis was carcinoid of the rectum.

Follow-up.—Periodic examinations have revealed more rectal adenomas, which have been fulgurated. There has been no recurrence of the carcinoid tumor. Barium enemas and sigmoidoscopic examinations do not show any other pathologic change.

Comment.—In this case we observed multiple adenomas, crypts, hypertrophied papillae and internal hemorrhoids associated with a rectal carcinoid which, had it occurred alone, might have been symptomless.

CASE 7.—M. A., a 39-year-old white woman, was admitted to the hospital on July 7, 1950. Approximately four weeks prior to admission a small rectal tumor had been palpated during the course of a routine physical check-up. She was hospitalized in another city, and a biopsy of the rectal tumor was performed (see pathologic report). A gastrointestinal series and a barium enema revealed no abnormality.

Physical examination revealed essentially normal conditions. Proctosigmoidoscopic examination showed a small, indurated area in the posterior aspect of the rectum, which represented the tumor. The past and family histories were noncontributory. The results of the laboratory work-up were within normal limits.

On July 13 an abdominoperitoneal proctosigmoidectomy was performed. The postoperative course was uneventful, and the patient was discharged in good physical condition on July 24.

Pathologic Report.—Gross: A small, firm nodule, measuring 0.6 by 0.3 cm. and covered with grayish-pink mucous membrane, was received for examination.

Microscopic: Beneath the rectal mucosa there was a nodule composed of epithelial cords and glands in a fibromuscular, collagenous framework. In one area the epithelial elements were arranged in a nondescript manner, with only the suggestion of rosette or alveolar formation. The cells were small, elongated and dark-staining. There was a definite degree of hyperchromatism and pleomorphism in the nuclei. An occasional mitotic figure was seen. The cytoplasm was eosinophilic and vacuolated in certain areas. In some instances the cytoplasmic membranes were indistinct. The general architecture was that of cords and columns presenting the somewhat festooned pattern of carcinoid tumor. In another group of sections the epithelial elements were slightly larger in size and showed a more definite tendency to tubular and alveolar formation. It is to be emphasized that these cells were smaller than those usually seen in adenocarcinoma of the rectum. The cells were moderately hyperchromic and had oval or round nuclei, varying in size, shape and staining characteristics. An occasional mitotic figure was seen. However, there was a definite uniformity in the architecture and in the cellular components. Apparently there are three forms of epithelial cells according to morphologic characteristics; small columnar or cuboidal cells, elongated palisading cells and polygonal cells.

Diagnosis.—The diagnosis was small-celled scirrhous adenocarcinoma of the rectum.

Supplemental Report.—In view of the small size of the cells and the general architecture of the neoplasm, the possibility of carcinoid of the rectum was seriously considered. Therefore, special stains were employed: Masson's silver impregnation, standard mucin stain and Russel's stain for fuchsinophilic granules, with the following results: argentaffin granules were not demonstrated; fuchsinophilic granules were present; mucin was absent.

Owing to this re-evaluation of the tumor, the final diagnosis has been altered to carcinoid of the rectum, which is still a malignant tumor of low growth capacity.

Follow-up.—The patient has been examined several times since the operation. She is in good health at the time of writing, and there has been no recurrence of the carcinoid.

SUMMARY AND CONCLUSIONS

1. Carcinoid tumors of the rectum are malignant but for the most part slow-growing.
2. Carcinoid tumors are easily confused with carcinoma both grossly and histologically. No doubt metastasizing lesions have been diagnosed as carcinoma owing to the fact that it was commonly thought that carcinoids were benign. The histopathologic picture has encouraged many pathologists to diagnose them as small-celled carcinoma.
3. The authors present 7 cases of carcinoid tumor of the restum, in 1 of which the lesion was associated with metastases to the liver and other abdominal viscera. Including the 7 cases here reported, 78 cases of carcinoid tumor of the rectum have been recorded; in 8 metastases were present, an incidence of 10.2 per cent. This incidence of metastases is the lowest for any group of carcinoids except the appendical group.
4. Silver stains and mucicarmine stains were done in 6 of the 7 cases. On the whole these stains were uninformative. All 6 were negative to the mucicarmine technic and 2 of the 6 demonstrated a suggestion of argentaffin properties, but these argentophilic areas were relatively scant.
5. Without exception, all of the carcinoids reported in this paper were "picked up" by proctosigmoidoscopic examination of patients with anorectal disease or in routine physical examination. We wish to point out the importance of detailed examination of the anorectum and lower sigmoid portion of the colon, not only for patients with anorectocolonic complaints but for all patients undergoing physical examination.

RÉSUMÉ ET CONCLUSIONS

1. Les tumeurs cancéroides du rectum sont malignes même si d'évolution lente.
2. Les tumeurs cancéroides sont souvent confondues avec le cancer tant à l'examen macroscopique que microscopique. Sans doute, des lésions mètastatiques ont été diagnostiquées cancéreuses dû au fait que l'on a vu que les lésions cancéroides étaient bénignes. L'examen histologique a incité les anatomopathologistes à les classer comme des cancers à petites cellules.
3. L'auteur rapporte 7 cas de tumeur cancéroide tu rectum dont un avec métastases aux viscères et au foie. Y comprisus 7 cas, 78 autres cas de tumeur cancéroide du rectum ont été rapportés; de ce nombre, 8 avaient des métastases soit une fréquence de 10.2% Cette fréquence est la moins élevée, à l'exception d u groupe appendiculaire.
4. Des préparations à l'argent et au mucicarmin ont été faites pour six des 7 cas. Les résultats ent été peu intéressants. Tous les six cas étaient négatifs au mucicarmin; deux cas avaient u réaction argentaffine, cepéndant très accentuée.

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Surgical Contrast Visualization of the Pancreatic Ducts

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PARIS

THE difficulties of clinical and surgical diagnosis of pancreatic diseases, particularly carcinoma of the pancreas and chronic pancreatitis, have stimulated the study of this problem. Obviously the diagnostic procedures used are of the utmost importance. It appeared to me that emphasis on the need of contrast visualization of the excretory pancreatic channels, particularly the duct of Wirsung, is of capital importance. In view of the lack of adequate means of administering a contrast medium which would reveal, roentgenographically, the pattern of the pancreatic ducts, I suggested in a report issued in collaboration with Bréhant at the French Congress of Surgery, held in Paris in 1949, that the pattern of the pancreatic pathways during surgical procedures be made the subject of a careful study.

Studies on the cadaver have convinced my associates and me of the possibility of catheterizing and injecting the duct of Wirsung. The roentgenograms thus obtained under normal conditions are of a particularly delicate design, and under pathologic conditions they should reveal sufficiently evident changes to give information as to the nature, the exact topography, and the depth and extension of the disease. After duodenopancreatic dissection the duodenal papilla is exposed by vertical duodenotomy performed over the second portion of the duodenum. Recognition of Vater's ampulla (which is sometimes affected) is facilitated by pressure on the gallbladder. Catheterization of Wirsung's duct is performed with a special polyethylene tube 1 mm. in diameter. A possible error consists in having the contrast medium enter the common duct, but observation of the reflux of bile promptly clarifies the situation. It is particularly noteworthy that pancreatic catheterization causes the flow of a clear liquid; or, no discharge issues. Thus, the absence of discharge of bile indicates that the proper course is being pursued and the desired effects will result.

Also, the first liquid obtained after introduction of the catheter into Wirsung's duct reveals a golden-yellow reflux, giving the false impression that the catheter has not entered the proper avenue but has found its way instead into the common duct. This is an erroneous impression. Under such conditions one wonders whether, perhaps, a little bile has been aspirated by capillarity into the polyethylene tube during its passage across the

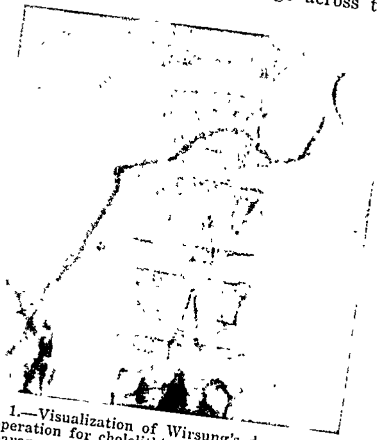

Fig. 1.—Visualization of Wirsung's duct during an operation for cholelithiasis. Normal roentgen appearance. Note extreme [illegible] Wirsun[illegible] course of

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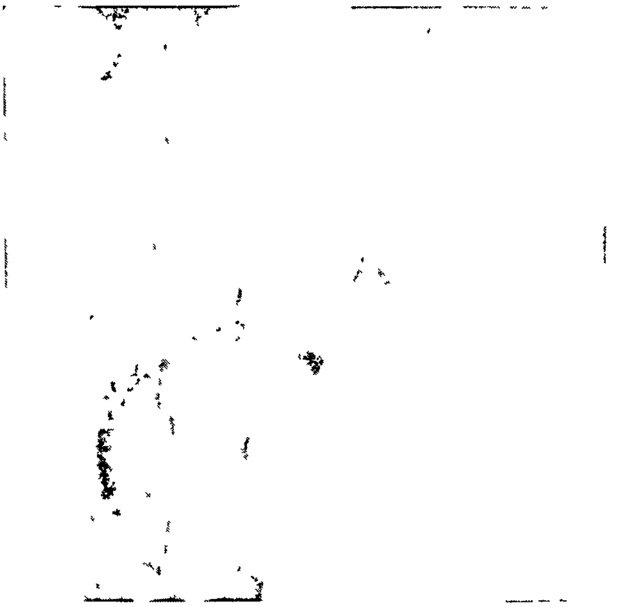

Fig. 2.—Chronic pancreatitis. To left of spine, at junction of isthmus with body of pancreas, note image indicating pseudodiverticulum.

ampulla; or, does it, perhaps, represent a reflux of bile into the excretory ducts of the pancreas? It is reassuring to note that the stylet, rubber bougie or polyethylene tube passes more easily into Wirsung's duct than into the common bile duct, though one would be inclined to believe the opposite.

Two to 3 cc. of 90 per cent diodone is now injected into the pancreatic duct, and a roentgenographic exposure is made.

One of the difficulties, and not the least, lies in the fact that with the portable roentgenographic units used at the operating table the exposure time is necessarily prolonged. Although respiration may be suppressed by the anesthetist and the interference of respiratory movements thus eliminated, the transmission of aortic pulsation is likely to cause considerable distortion of the image. This is a com-

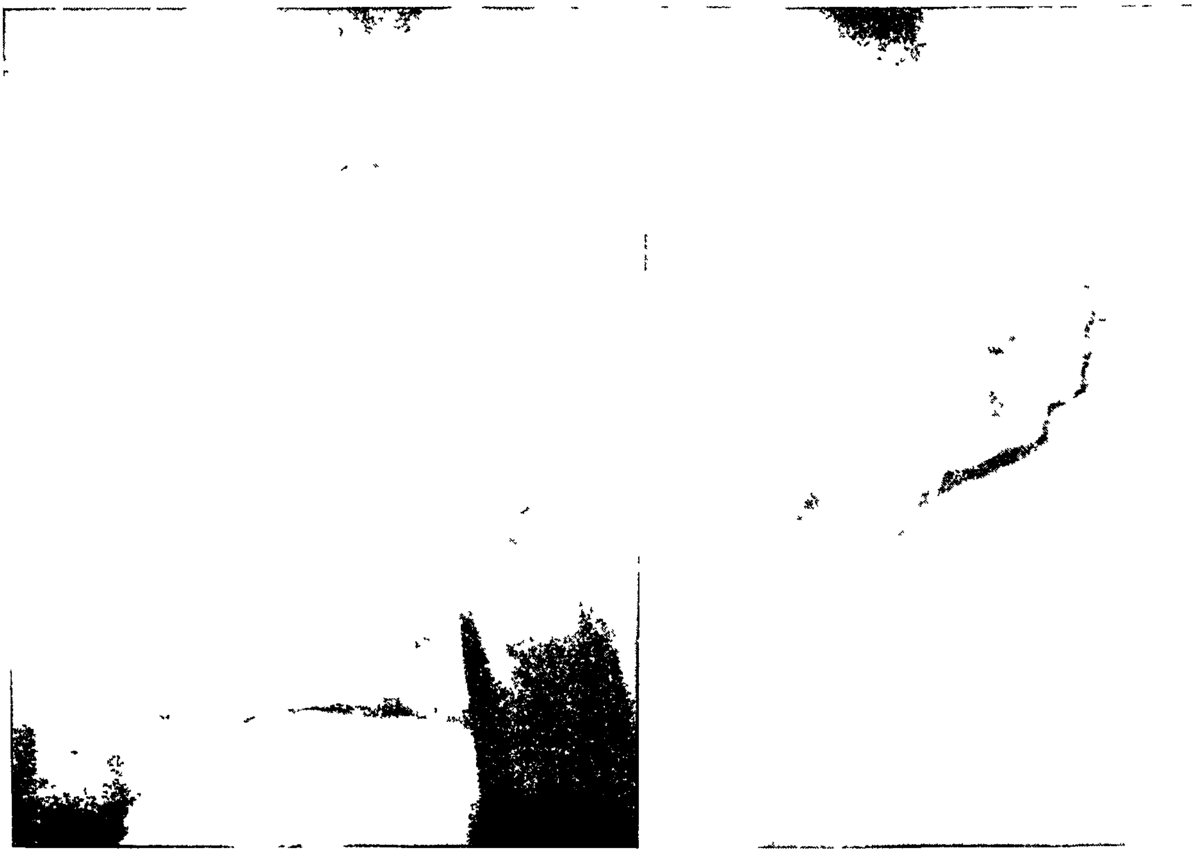

Fig. 3.—*Left*, visualization of Wirsung's duct during an operation. Note crisp outline of glandular acini of pancreas, which appear dilated. Patient had chronic pancreatitis. Note clip placed at level of papilla in this roentgenogram. *Right*, roentgenogram taken after a week of drainage. Opaque medium now shows only pancreatic ducts, which appear dilated.

mon observation in all roentgenograms of the pancreas. To obtain clear images of pancreatic concretions, etc., one should keep in mind the importance of short exposures. The problem, therefore, is to obtain brief exposures that are yet long enough to result in sufficiently dense negatives.

In the absence of sufficiently powerful equipment in the operating room, our exposures have been obtained with a mobile unit by simply bringing the tube as close to the patient as possible. We place the tube at a distance of 20 cm. from the abdominal wall, which permits us to reduce the exposure time to 0.3, 0.4 or 0.5 of a second.

It is possible that this technic results in slight distortion of the peripheral area of the picture; this, however, is not too disturbing. The method also causes a certain enlargement of the image, which may be rather advantageous. The use of a grid is in no way harmful; we always use it.

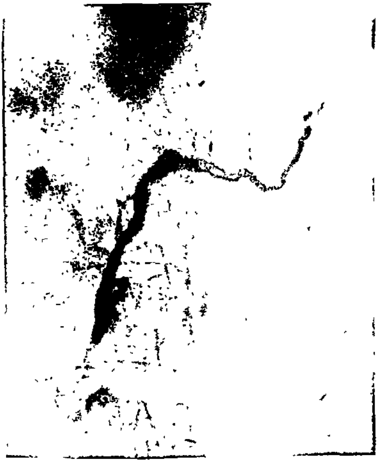

Fig. 4.—Visualization of pancreatic ducts during operation for malignant disease of papilla. Observe dilatation of Wirsung's duct and reflux of material to dilated common duct.

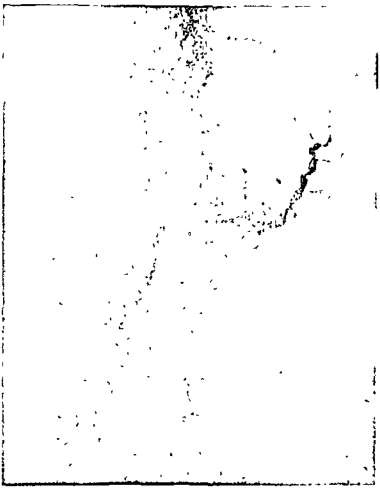

Fig. 5.—Roentgenogram taken in same case as Fig. 4, after removal of tumor of papilla. Opaque medium follows Wirsung's duct only. No reflux into common duct is discernible.

The reproductions here presented give an idea of the results that may be obtained by our procedure; the duct of Wirsung, the avenues of its origin and sometimes the acini of the pancreas are injected perfectly.

We leave the polyethylene tube *in situ*, in Wirsung's duct, whence it is made to emerge through a tiny gap in the wall of the duodenum, which is sutured at two places and attached to the anterior parietal peritoneum. This technic allows us to obtain pure pancreatic juice and to study its chemical characteristics and the function of the gland.

Our researches are continuing, and we shall publish our final conclusions at a later date.

The roentgen examinations described can be repeated several times during the operation, and also on the fol[illegible]ving days, to verify the positio[illegible]ylene tube in Wirsung's duct. All of our patients made good recoveries. Scar formation was in no way retarded. The surgical procedures are simple.

In no case have these maneuvers been followed by acute abdominal symptoms indicating any untoward occurrence. A word of caution is in order here; namely, that one should limit the amount of contrast medium and inject it under reasonable pressure.

Temporary jaundice may occur, indicating partial obstruction of the papilla or its irritation by the tube left *in situ.*

Under pathologic conditions, when an obstacle such as a tumor of the head of the pancreas is present and associated with dilatation of Wirsung's duct, it seems feasible to puncture the pancreas with a needle at the level of the isthmus of the body of the pancreas or of Wirsung's duct, to aspirate pancreatic juice under tension, to inject the contrast medium, and to obtain a descending contrast visualization as I have suggested in collaboration with J. Bréhant; thus far, however, we have had no opportunity to verify this. The technic here outlined, which is undoubtedly much simpler than any we have known before, should obviously be reserved for cases in which there is marked dilatation of the excretory ducts of the pancreas.

A possible criticism of our method of transpapillary catheterization is that it necessitates a duodenotomy; but it remains to be seen whether in any case this procedure does not constitute an advantage.

SUMMARY

The diagnostic importance of visualization of the pancreatic ducts is pointed out. The surgical approach with contrast visualization is evaluated. The author describes his technic for visualizing the pancreatic ducts and evaluates its merits from a diagnostic point of view.

RIASSUNTO

E' segnalata l'importanza di visualizzare i dotti pancreatici. E' presa in considerazione la visualizzazione con mezzo di contrasto per via chirurgica. Gli Autori descrivono la tecnica per visualiz-zare i dotti pancreatici e ne segnalano i meriti dal punto di vista diagnostico.

ZUSAMMENFASSUNG

Es wird auf die diagnostische Bedeutung der Kontrastdarstellung der Bauchspeicheldruesengaenge hingewiesen. Der chirurgische Zugang mit anschliessender Einspritzung des Kontrastmittels wird eroertert. Die Verfasser beschreiben die Technik des Verfahrens und seinen diagnostischen Wert.

RESUMEN

Se expone la importancia diagnóstica de la visualización de los conductos pancreáticos. Se valora la vía quirúrgica con la visualización por contraste. Se describe la técnica para visualizar los conductos pancreáticos y se valoran sus méritos desde el punto de vista del diagnóstico.

RÉSUMÉ

Il est de grande importance de bien déterminer les canaux pancréatiques La technique chirurgicale est bien simplifiée avec l'aide des milieux de contraste. L'auteur décrit sa technique pour déterminer les canaux pancréatiques avec sa valeur diagnostique.

SUMÁRIO

A importancia diagnostica da vizualização dos ductos pancreaticos é focalizada. O acésso cirurgico com vizualização por contraste é avaliado. Os autôres descrevem a tecnica para vizualização dos ductos pancreaticos e avalia seus méritos sob o ponto de vista diagnostico.

Surgical Arteriovenous Fistula Between Right Common Carotid Artery and Internal Jugular Vein

Effects in a Series of Thirty-Three Patients

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INJURY to the brain by trauma, anoxia, hemorrhage, and vascular occlusion is characterized pathologically by a decreased blood flow and by glial proliferation, which is manifest clinically as mental deficiency, convulsive states and motor-sensory impairment.

Penfield[1] demonstrated that neurons in a scarred area of the brain may be destroyed completely, may die gradually, or may continue to live in an obviously abnormal state, owing to the poor blood supply. They never multiply or become hypertrophied. The existence of viable but nonfunctioning neurons is seen clinically in the cerebrovascular accident. Widespread cerebral involvement may occur with the acute episode, yet function will return to the affected part after a period of weeks or months.

Vascular surgeons have been able to increase the blood supply to an area by reversing the blood flow through the veins of the affected part. This procedure became feasible after Holman's work[2] on the physiologic nature of the arteriovenous fistula.

It had been noted for a long time that an arteriovenous fistula in an extremity caused an increase of its size and temperature and that the increased venous pressure placed an additional load upon the heart until the patient either died of heart failure or the fistula was corrected surgically.

Bernheim[3] reported a case in which he reversed the circulation in all four extremities and on which he had an eighteen-year follow-up report. It should be noted that he ligated the vein proximal to the fistula.

Beck[4] was able to reverse the blood flow through the heart veins by anastomosing the systemic arteries to the coronary sinus.

The cervical arteriovenous fistula, first described by Beck, McKhann and Belnap[5] as a means of increasing the blood supply to the brains of children suffering from cerebral palsy, was based on the previously mentioned work of Penfield. However, the procedure is still in the realm of experimental surgery, as many of the problems arising will have to be considered and evaluated over a longer period.

In following the progress of 33 patients after operation, we noted the occurrence of certain conditions and complications which should be of interest to surgeons who perform this operation.* The complications, our attempts to control them, and our results will be discussed in this paper.

Anatomic and Physiologic Considerations.—A detailed account of the anatomic and physiologic nature and effects of the arteriovenous fistula may be obtained

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Aided by a grant from the United Cerebral Palsy Associations of Michigan.
Submitted for publication July 24, 1951.

*This series includes 9 cases previously reported (J. Mich. State Med. Soc. 49:1191-11 0 from appropriate textbooks, these will be presented only briefly.

The arterial supply to the brain is by means of the carotid and vertebral arteries, which ultimately unite inside the calvarium to form the circle of Willis at the base of the brain.

The venous return from the brain does not parallel its arterial supply. The veins drain into the great venous sinuses, which in turn drain into the internal jugular veins. In addition, there is a considerable amount of venous return through the emissary veins of the diplöe, which anastomose with the veins of the scalp, face and neck to form important collaterals.

The cerebrospinal fluid is secreted by the choroid plexus in the ventricles and traverses through the ventricular system and through the openings in the fourth ventricle into the subarachnoid space. The brain is supported in this fluid medium, which completely surrounds it. The cerebrospinal fluid is reabsorbed in the great venous sinuses through the arachnoidal granulations; its circulation is shown in Figure 1. This circulation is the basis for the Queckenstedt test, which will be discussed later in relation to the alterations produced by cervical arteriovenous fistulas.

Procedures.—Certain laboratory procedures, which varied somewhat with the ages of the patients, were carried out preoperatively in all cases.

The children for whom a cervical arteriovenous fistula was considered were those who presented birth injuries. Most of them were under 5 years of age. Complete physical and neurologic examinations were carried out and an electroencephalogram done in each case. There was also a complete blood count, a urinalysis and a serologic test. Special hematologic studies were ordered as dictated by the individual case. Studies of the spinal fluid included a Queckenstedt test and a pneumoencephalogram. Specimens of the spinal fluid were sent to the laboratory for chemical, cytologic and bacteriologic examination. Arteriograms, taken with 70 per cent diodrast, were included if indicated.

The adults in this series were those who

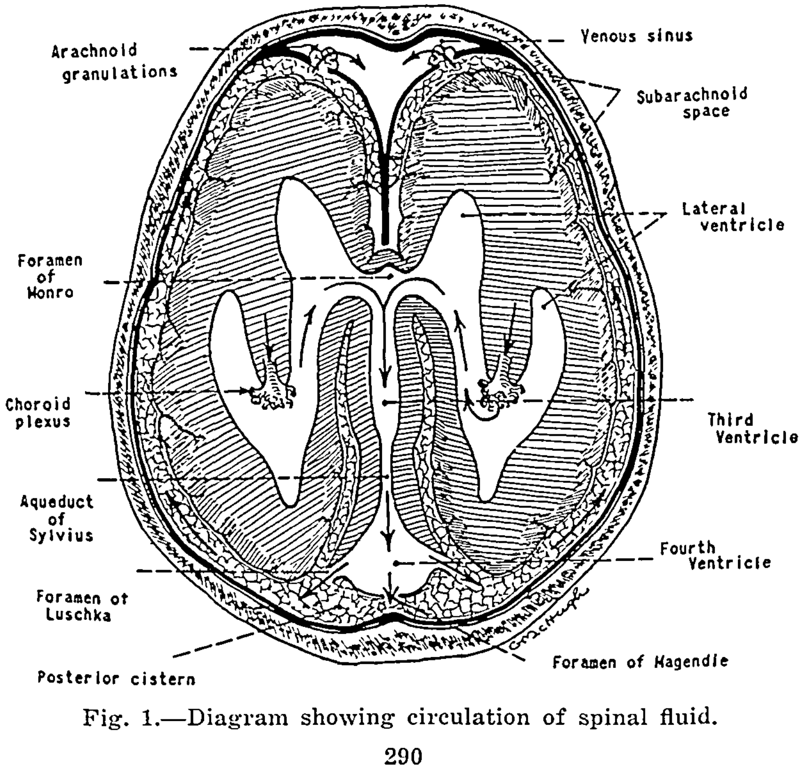

Fig. 1.—Diagram showing circulation of spinal fluid.

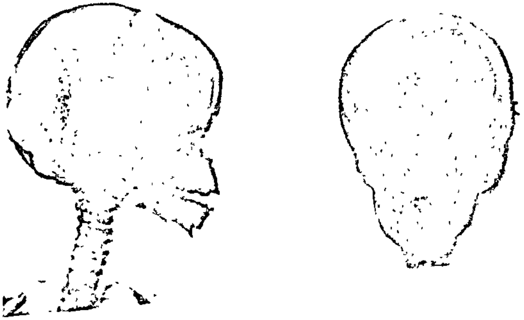

Fig. 2.—Bulging fontanels and separation of suture lines in a child as a result of increased intracranial pressure.

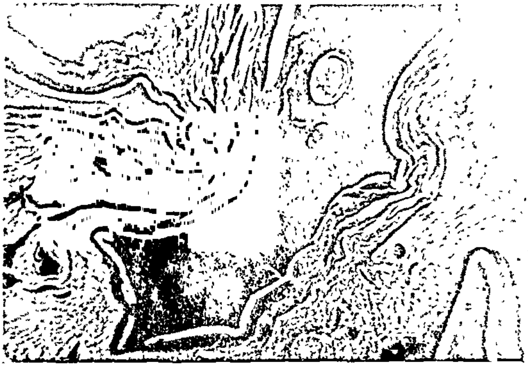

Fig. 3.—Hypertrophy and tortuosity of vein after creation of a cervical arteriovenous fistula. No change is apparent in the media or intima of the vessel.

had survived cerebrovascular accidents and who had residual hemiplegia, aphasia or convulsive disorders. Most of them were over 50 years of age and had made what was considered a maximum spontaneous recovery after the vascular accidents. Many had been treated by one or more blocks of the stellate ganglion with no further improvement.

The adult patients received complete physical and neurologic examinations, routine blood studies, urinalyses and serologic tests. Renal function tests, electrocardiograms, special studies of the blood chemistry and arteriograms were added if indicated. The spinal fluid studies were the same as those described for the children.

Preoperatively all patients were given antibiotics for twenty-four hours. Blood was held available in the operating room, and intravenous fluids [illegible] before

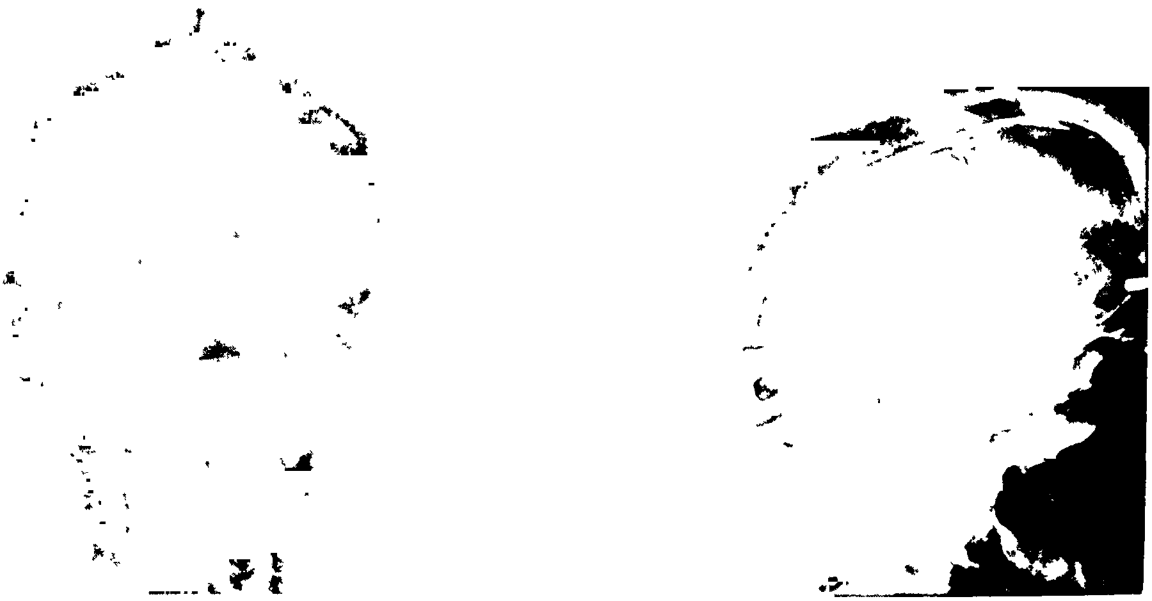

Fig. 4.—Dilated occipital veins observed three months after operation.

the operation began. In children the intravenous administration of fluids occasionally necessitated a cut-down, a cannula being inserted into the vein.

The operation was performed with intratracheal anesthesia. The purpose of this type of anesthesia in these cases was twofold: first, it insured a patent airway when the head was twisted to one side, especially with children; second, it was the only method that provided a means of establishing the completely closed system essential for pressure anesthesia. Pressure anesthesia was of primary importance if the pleura was punctured.

Operative Procedure.—The same general operative procedure was carried out in all cases. The arteriovenous fistula was created between the right common carotid artery and the internal jugular vein. A transverse incision was made 1 to 2 cm. above the right clavicle and parallel to it, extending from the midline as far laterally as was deemed necessary for exposure of the carotid sheath. This incision usually paralleled the skin folds. The sternocleidomastoid muscle was cut transversely, exposing the carotid sheath. The omohyoid muscle was cut at its tendinous attachment to the carotid sheath. The internal jugular vein was dissected free from the level of the clavicles to the base of the skull, and all branches leading into it were ligated and divided. The common carotid artery was freed up from surrounding adventitial tissue, and a Potts clamp was applied. The internal jugular vein was occluded above and below the Potts clamp by means of heavy silk occluding ligatures, with which the vein was tied to the Potts clamp. The artery and the vein were opened and a 3 to 4 mm. fistula was established. A No. 6-0 running silk suture was used. The internal jugular vein was divided between the fistula and its entrance into the superior vena cava. After the Potts clamp was released, with all bleeding under control and the fistula functioning, the cut ends of the omohyoid and the sternomastoid muscles were approximated with No. 2-0 chromic sutures. The platysma and skin were closed separately.

Because the jugular vein pulsates with the patient's respiration, a constant guard was maintained during the operation against inadvertently opening the internal jugular vein and causing an air embolism or a serious hemorrhage.

Postoperatively the patients were constantly supplied with oxygen for twenty-four hours, a tent being used for children and a nasal catheter for adults. After the twenty-four hours of oxygen therapy, steam inhalations were used if the patient complained of hoarseness.

The patients were given an antibiotic, usually penicillin, parenterally for three to five days. They were kept on a stir-up regime, with fluids and food as tolerated. Blood and intravenous fluids were administered as long as was deemed necessary, the first twenty-four hours being sufficient in most cases. Physiotherapy in the form of heat, massage and attempts at active exercise was started on the second or third postoperative day.

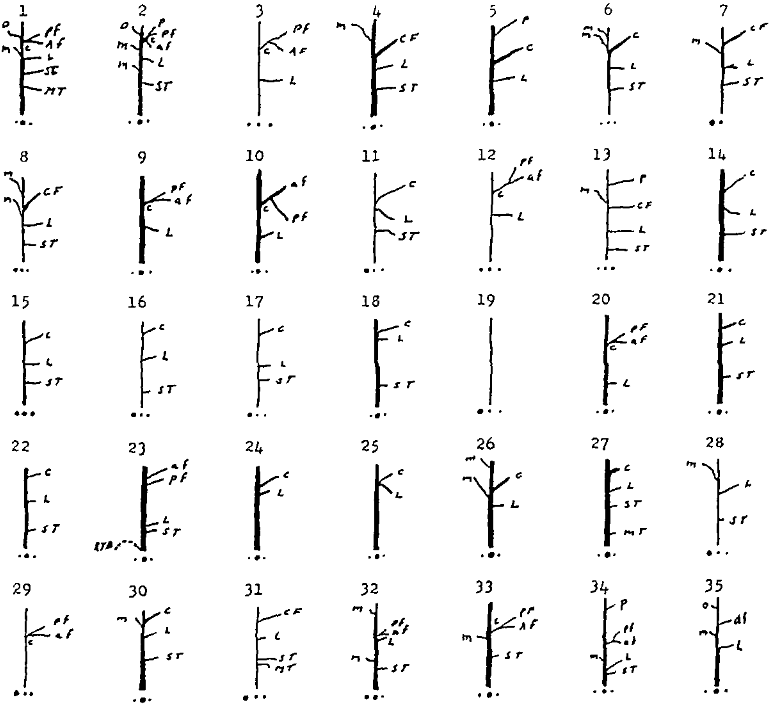

Fig. 5.—Diagrams of variations of the right internal jugular vein in 33 cases of arteriovenous fistula. *O*, occipital veins; *af*, anterior facial veins; *P*, pharyngeal vein; *ST*, superior thyroid vein; *RTD*, right-sided thoracic duct; *C*, common facial vein, often made up of anterior and posterior facial veins; *M*, muscular veins; *Pf*, posterior facial veins; *L*, lingual veins; *MT*, middle thyroid vein. Dots below each diagram represent relative cross-sectional diameters of (1) external jugular vein, (2) jugular vein and (3) common carotid artery. (The numbers in this chart do not parallel numbers in Table 1.)

Fecal impactions, urinary retention, bed sores and postoperative ileus, especially in the adults, were treated as they occurred.

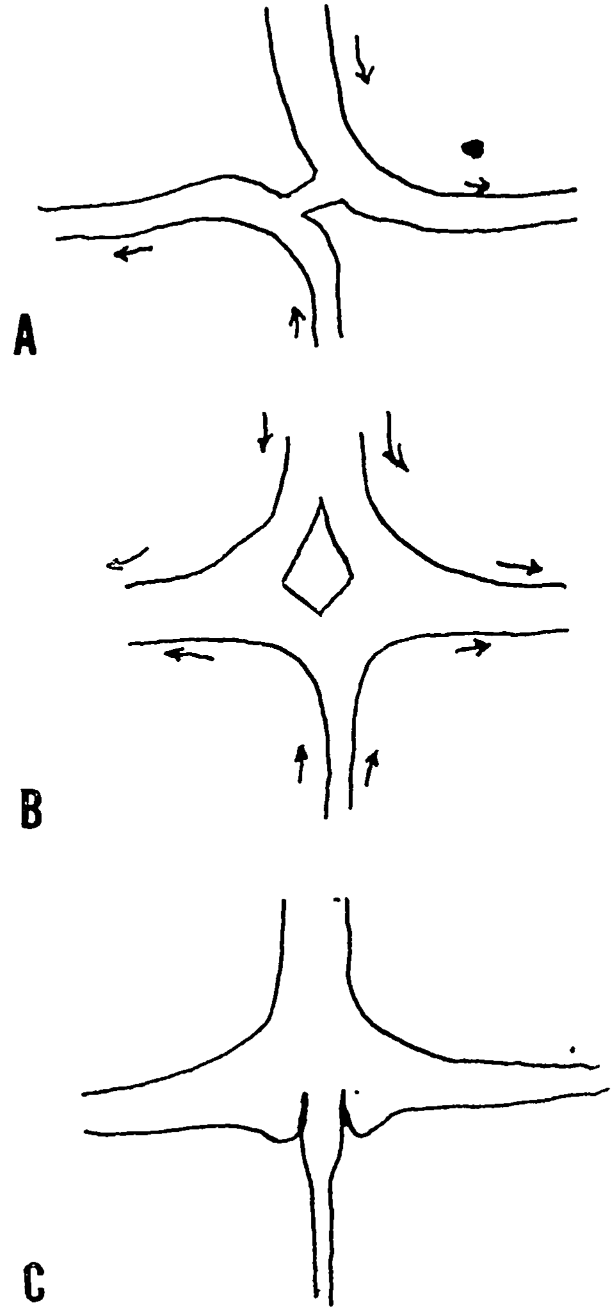

Fig. 6.—Anatomic variations in the torcular Herophili. *A*, Type 1, observed in 75 per cent of a series of 50 cases reported by Dumont. *B*, Type 2 (sinus with island), observed in 30 per cent of a series of 100 cases. *C*, Type 3 (fused sinuses), observed in 20 per cent of a series of 100 cases. (Sketched from A. Nicolas' "*Traite D'Anatomie Humaine*".)

The average patient was discharged from the hospital on the fifth to the seventh postoperative day and was seen at monthly intervals at home or in the office.

COMMENT

The immediate postoperative course of the average patient was smooth. However, certain complications peculiar to this type of surgery did occur. Several patients had transient edema of the eyelids that disappeared without treatment. In 1 patient a headache developed in the left parietal area at the site of previous surgical treatment of the brain. The pain disappeared immediately when the fistula was occluded temporarily. Hoarseness, which was usually due to laryngeal irritation from the intratracheal tube, cleared after steam inhalations taken before the patient left the hospital. In this immediate postoperative period many of the patients showed marked subjective improvement; they felt that something had been done and was being done for them. For this reason we recommended that their physiotherapy be continued at home for the physical and the obvious psychologic benefit derived from it.

If the fistula was made too small, it closed off spontaneously within the first few days. This occurred in children who had an atrophic jugular vein because of brain atrophy or previous injury to the sinus system. It occurred in one adult when No. 4-0 instead of No. 6-0 silk was used for an anastomosis of normal size.

Signs of increased intracranial pressure developed if the fistula was constructed too large. Adults complained of severe headache and vomiting, and in rare instances became comatose. These conditions were remedied by surgically reducing the fistula to its proper size or eliminating it entirely. Immediately after this surgical procedure the symptoms disappeared and the intracranial pressure returned to normal. This particular complication occurred in children who had a very small internal jugular vein at the time the fistula was made. It was evidenced in the children by bulging fontanels, separation of suture lines (Fig. 2), vomiting and loss of weight. Both the jugular vein and the fistulous opening gradually increased in size under the influence of the arterial pressure. We eliminated this by using a continuous running suture, which allowed the fistula to retain its original size.

A number of patients complained of a buzzing sensation in the right ear. In order to avoid this complication we constructed the fistulas between the common carotid artery and the internal jugular vein, as low in the neck as possible. We did not have to close any fistulas to relieve this condition.

Atherosclerotic plaques were palpated in the carotid arteries of several of our adult patients. In 1 case a fistula was created at the site of an atherosclerotic plaque in a patient with severe essential hypertension. Several weeks after the operation he bled from his wound and a seeping aneurysm was diagnosed. At operation a false aneurysm had formed at the distal end of the fistula. In this case the internal jugular vein was ligated, the aneurysm removed and the defect in the artery wall repaired. Eight months after the operation the patient was still expelling silk sutures.

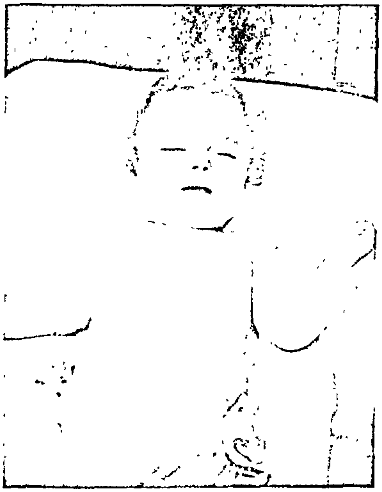
Fig. 7.—Infra-red photograph of child in Case 11 (Table 1), showing proptosis and dilated scalp veins.

Several patients complained of an in-

Fig. 8.—Roentgenograms taken in Case 11. These do not show the ventricular defects seen in the gross specimen of the brain (Fig. 9).

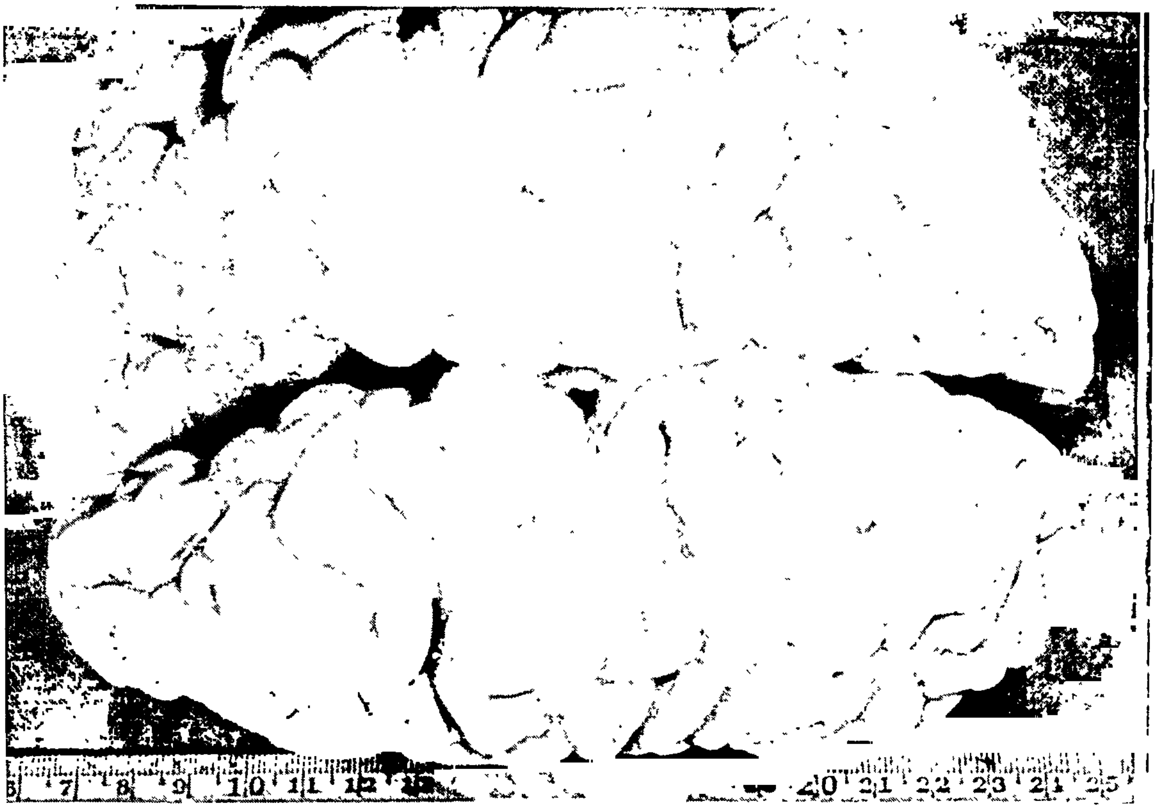

Fig. 9.—Gross specimen of brain in Case 17, showing ventricular defects.

crease in neck size after construction of the arteriovenous fistula. One patient stated that he had to buy new shirts with the collar one size larger. This increase was the result of aneurysmal dilatation in the right internal jugular vein.

After a cervical arteriovenous fistula was produced, the vein, being subjected to greater pressure, became hypertrophied and tortuous. The thickening in the venous wall was due to fibrosis occurring in the adventitial area. No changes were noted in the muscular media or intima of the vein (Fig. 3). It is a well established fact that veins dilate up under pressure, as in the case of varicose veins. But in the case of the cervical arteriovenous fistula these collateral veins dilated rapidly, and some shunted the blood back to the heart, thereby greatly increasing its work. To eliminate this, even the smallest muscular branches emptying into the internal jugular vein were ligated up to the base of the skull. Figure 4 shows dilated occipital veins occurring three months after operation.

The emissary veins in the diplöe increased in size after the establishment of an arteriovenous fistula and became very noticeable if a craniotomy was done, as in Case 11 (Table 1).

Figure 5 shows the anatomic variation of the jugular veins and their relation to the sizes of the external jugular vein and the common carotid artery. In 33 dissections, the greatest variations in the internal jugular vein were observed in children. When the internal jugular vein was small, the external and anterior jugular veins were larger than was expected. One case of right thoracic duct was encountered in this series.

Further variation in the venous anatomic picture inside the skull are shown in Figure 6. This chart shows the three types of connections encountered between the right and left sigmoid sinuses at the torcular Herophili. The chart is taken from Nicolas and is based on studies of French anatomists.

Intracranial shunts occur. The ones we encountered involved a shunt through the inferior petrosal and cavernous sinuses, with the ophthalmic veins producing proptosis. Another shunt was from the right lateral sinus through the torcular Herophili to the left lateral sinus down the left internal jugular vein, producing an increasing load on the right side of the heart. Autopsies on several patients whose angiograms showed this type of shunt revealed right cardiac dilatation. A third shunt was through the inferior sagittal sinus and the great veins of Galen, into the veins draining the middle of the brain. Because such shunts may produce serious complications, we adopted the routine measure of taking an angiogram in a retrograde manner through the right internal jugular vein prior to operation. If one of the shunts was demonstrated, an arteriovenous fistula was considered to be contraindicated. Case 11 was an instance of a shunt through the torcular Herophili to the left sigmoid sinus, producing right cardiac dilatation. This same case also illustrates a shunt through the inferior petrosal and cavernous sinuses into the retrobulbar veins, producing proptosis (Fig. 14). Figure 7 is an infra-red photograph of the child, demonstrating dilated scalp veins and proptosis. Roentgenograms (Fig. 8) did not show the ventricular defects seen in the gross specimen of the brain (Fig. 9). Figure 10 is a slide of a microscopic section of the brain. Figure 11 shows a rhabdomyoma of the heart observed in this case. At autopsy this child was found to have tuberous sclerosis (Figs. 12 and 13).

Table 2 gives the results in our series thus far. It must be remembered that all of these cases were selected after all other forms of treatment had been tried and had

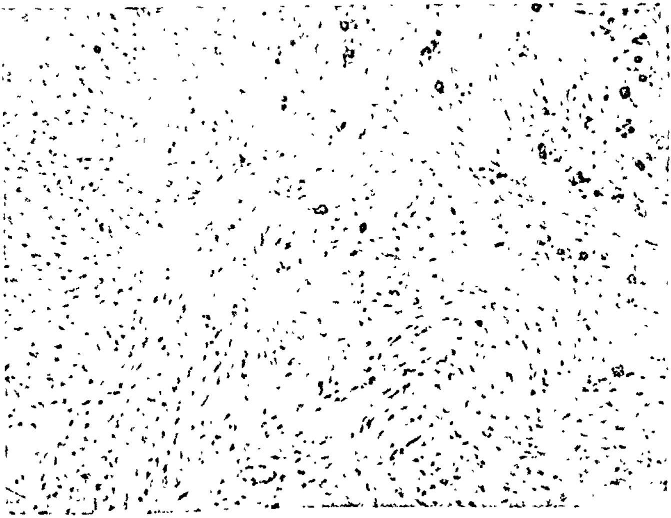

Fig. 10.—Slide of microscopic section of brain in Case 11.

failed. At its best, it was "salvage surgery." The percentage of objective improvement in children was 18 per cent; in adults, 22 per cent. Roughly 1 out of 5 showed some type of objective improvement.

The operative mortality was 6 per cent in the adult group. The deaths occurred in the immediate postoperative period, but they were not due to technical errors in the surgical procedure. One patient died of aspiration pneumonia and the other of heart failure. There were no deaths among the children in the immediate postoperative period.

A summary of the cases in this series is contained in Table 1, which demonstrates that the term "cerebral palsy" includes a multitude of diseases and syndromes (Figs. 9, 12, and 13). Subdural-hematomas, cerebral agenesis of various types and familial diseases (tuberous sclerosis) are not amenable to this type of surgical treatment and must be diagnosed preoperatively.

Queckenstedt Test.—The cervical arteriovenous fistula may produce marked changes in intracranial pressure as measured by the Queckenstedt test. Table 3 shows these variations preoperatively, immediately after the operation, and in the late postoperative period, as well as the effects of making the fistula too large or too small. In addition, it gives the results observed when the blood was directed over the surface of the brain or shunted down the left lateral sinus. As is shown by this table, there was no marked chemical change in the spinal fluid.

The spinal fluid pressure normally ranges from 100 to 200 mm. When the jugular veins are compressed, it rises rapidly to over 200 mm., returning immediately to its previous level when the pressure is released. When both jugular veins are compressed, the pressure rises rapidly

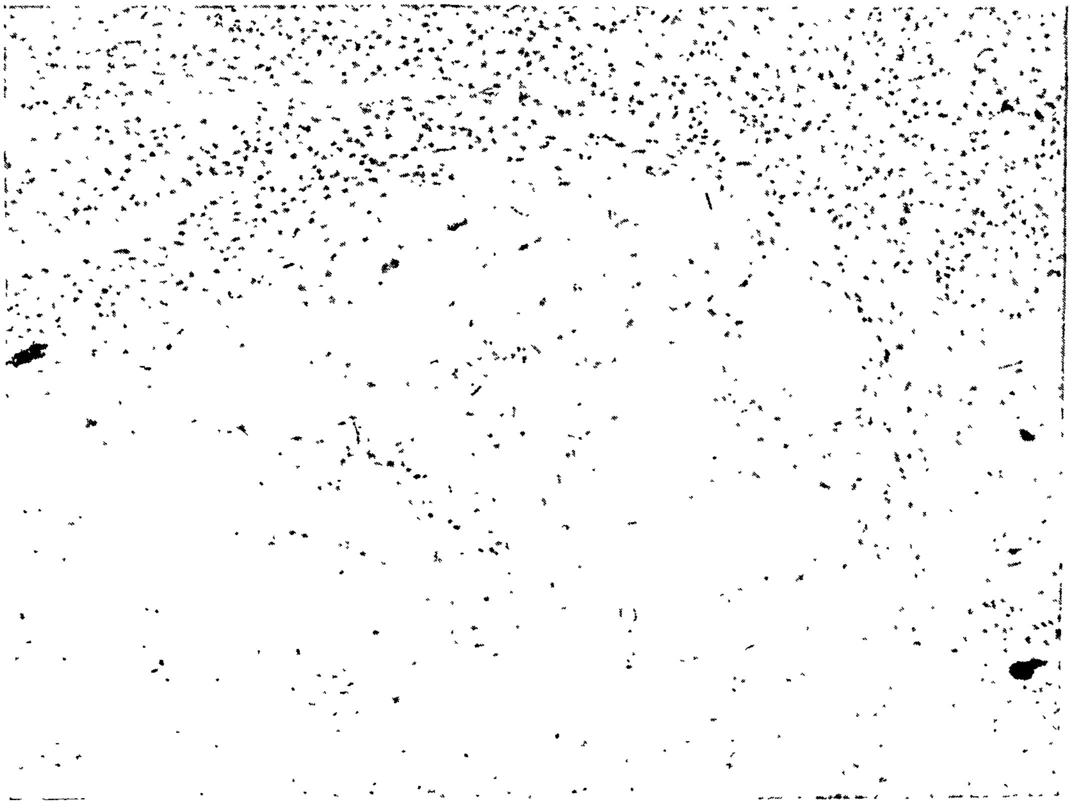

Fig. 11.—Rhabdomyoma of heart observed in Case 11.

to 300 mm. or more and again returns rapidly to normal with release of the compression.

Immediately after an arteriovenous fistula of the proper size (3 to 4 mm. in diameter) was created, the intracranial pressure was elevated above normal, but it gradually returned to normal within a week or so after the operation.

If a Queckenstedt test was done on the fistulous side (occluding the fistula) the spinal fluid pressure fell rapidly to a subnormal level but returned to its previous reading when the fistula was opened. When the opposite jugular vein was compressed, the pressure increased rapidly to over 400 mm. and was increased in some instances to a higher level than that produced in a normal person by occluding both internal jugular veins. It returned rapidly to its previous level after release of compression.

If, when the fistula was occluded, the blood was traversing through the superior sagittal sinus and over the surface of the cerebral hemispheres as shown by angiograms (Fig. 4), the fall was not as great as when the blood was shunting across at the torcular Herophili and down through the left internal jugular vein (Fig. 14). This blood was not going through a capillary bed and was placing an increased burden upon the right side of the heart, which eventually would have led to right cardiac dilatation and failure. In our few cases the marked drop in cerebrospinal fluid pressure in the Queckenstedt test when the fistula was compressed caused us to wonder if this simple test would be of use in determining whether a good result could be predicted in a given case. The changes produced in the Queckenstedt test by the cervical arteriovenous fistula suggest that it might be a useful diagnostic aid in cases of suspected intracranial arteriovenous communications.

If the fistula was made too small, the effect upon the results of the Queckenstedt test was the same as that encountered in the presence of lateral sinus thrombosis. When the side of the occluded fistula and the jugular vein were compressed, there was no change in the pressure. When the opposite jugular vein was occluded the pressure rose to the level that it would reach if both jugular veins were compressed; then it returned to normal immediately after release of the pressure.

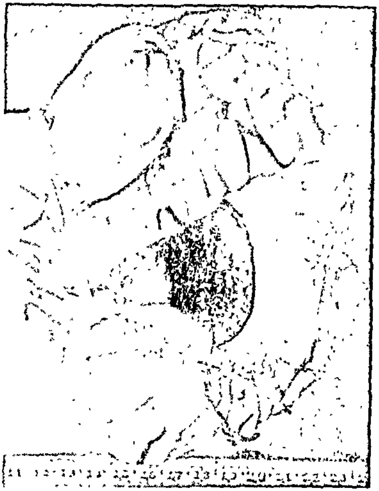

Fig. 12.—Gross specimen in Case 1. Note atrophic Gyri under site of subdural membrane.

These pressure changes produced by the arteriovenous fistula, as observed in the Queckenstedt test, are being studied further, and we are attempting to correlate these data with those obtained from the arteriograms and the postmortem observations.

Explanation of Improvement.—The explanation of improvement in our series probably lies in the fact that patients in whom the blood was shunted over the cortex received more blood into the injured areas. Those who showed no improvement were having no blood shunted up to the cortex; the blood was being shunted instead into the sigmoid sinus on the opposite side, the inferior sagittal

TABLE 1.-

Patient	Age and Sex	History	Diagnosis	Accompanying Conditions	Additional Surgical Treatment
1 (R. A.)	2; M	Birth injury with paralysis of all extremities	Cerebral palsy; spastic quadriplegia; ?subdural hematoma	Respiratory difficulty	None
2, 3 (C. S.)	3; F	Birth injury; blue baby at birth	Spastic quadriplegia; cerebral atrophy, generalized	Idiocy; deafness; blindness	Left A-V fistula (atrophic left jugular vein)
4 (S. H.)	2; M	Premature infant; birth weight 3 lb., 11 oz.; blue at birth	Cerebral palsy	?Blindness; constipation	Reduction in size of fistula
5 (D. J.)	2; F	Birth injury with paralysis of all four extremities	Cerebral palsy	Otitis media; bronchitis; moderate hydrocephalus	None
6 (J. M.)	54; M	Stroke, Feb. 1950, with paralysis of right side	Cerebral thrombosis with right hemiplegia	Generalized arteriosclerosis	None
7 (G. V.)	52; M	3 strokes (1943, 1941, 1948) with paralysis of left side	Postcerebral hemorrhage with left hemiplegia	Essential hypertension; generalized arteriosclerosis; benign prostatic hypertrophy	Resection of seeping false aneurysm; stellate ganglion blocks
8 (H. K.)	52; M	Stroke with left-sided paralysis, 1948	Cerebral thrombosis with left hemiplegia	Generalized arteriosclerosis; bilateral (staghorn) renal calculi	Stellate ganglion blocks
9 (G. R.)	65; M	4 strokes since 1940 with paralysis of the right side; inability to talk	Right hemiplegia; aphasia	Generalized arteriosclerosis; essential hypertension; osteoarthritis; auricular fibrillation	None
10 (G. A.)	49; M	Stroke, 1949, with paralysis of right side	Right hemiplegia secondary to cerebral embolus	Rheumatic heart disease; syphilitic aortitis	None
11 (H. W.)	3 mo.; M	Convulsions since birth; 1 brother died age 5 mo. of thyroid tumor; 1 living sister is cretin, aged 6 years; mother takes 3 grains of thyroid daily	Cerebral atrophy; grand mal	Tuberous sclerosis	Craniotomy, January 1950
12 (A. E.)	67; M	Stroke, 1941; paralysis of right side	Generalized arteriosclerosis; cerebral thrombosis	Essential hypertension	None
13	54; M	Stroke, 1948, with paralysis of right side; inability to talk	Cerebral thrombosis; right hemiplegia; aphasia	Generalized arteriosclerosis	None

Postoperative Complications	Results	Progress	Postmortem
Transient edema of eyelids	EEG improved, spasticity decreased	Able to sit alone; better use of hands	Subdural hematoma (see Figure 15, showing brain), terminal acute cardiac dilatation from an A-V shunt at torcular Herophili
Nonfunctioning fistula	No improvement	Sent to Coldwater, Michigan	
Increased intracranial pressure; vomiting; weight loss, spinal fluid pressure 600 mm.	Spinal fluid pressure returned to normal, weight gain; suture lines narrowed	Decreased spasticity; vision	
None	Decreased spasticity	Still blind	
None	Improvement in use of arm and leg; returned to work	Collar size increased one size; dilatation of internal juguler vein (aneurysm?)	
Ruptured false aneurysm one month postop.; silk sutures still working out of wound 8 months later	Decreased tremor and pain in left arm and leg; increased strength	Back to original hemiplegic state after closure of fistula, resection of aneurysm and ligation of right internal jugular vein	
Nonfunctioning fistula	No improvement	No change	
Buzzing noise in right ear	Improvement in speech and walking ability	Digitalized for auricular fibrillation and heart failure; flare-up of arthritis	
Auricular fibrillation, buzzing in right ear	Tingling in right leg	No change, auricular fibrillation	
None	No improvement, shunt down left sigmoid sinus and inferior saggital sinus to ophthalmic veins; convulsions continue	Dilated veins of scalp; edema of right eyelid and proptosis (Fig. 8)	Tuberous sclerosis; rhabdomyomas of heart (Figs. 7, 8, 10, 11, 12, and 13)
None	Improvement in walking; tremor, (right hand), decreased	Hoarseness; paralysis of left vocal cord; frequent colds; nervousness	
None	Improvement in speech and walking ability	Developed pneumonia while deer hunting	

Table 1.—

Patient	Age and Sex	History	Diagnosis	Accompanying Conditions	Additional Surgical Treatment
1 (R. A.)	2; M	Birth injury with paralysis of all extremities	Cerebral palsy; spastic quadriplegia; ?subdural hematoma	Respiratory difficulty	None
2, 3 (C. S.)	3; F	Birth injury; blue baby at birth	Spastic quadriplegia; cerebral atrophy, generalized	Idiocy; deafness; blindness	Left A-V fistula (atrophic left jugular vein)
4 (S. H.)	2; M	Premature infant; birth weight 3 lb., 11 oz.; blue at birth	Cerebral palsy	?Blindness; constipation	Reduction in size of fistula
5 (D. J.)	2; F	Birth injury with paralysis of all four extremities	Cerebral palsy	Otitis media; bronchitis; moderate hydrocephalus	None
6 (J. M.)	54; M	Stroke, Feb. 1950, with paralysis of right side	Cerebral thrombosis with right hemiplegia	Generalized arteriosclerosis	None
7 (G. V.)	52; M	3 strokes (1943, 1941, 1948) with paralysis of left side	Postcerebral hemorrhage with left hemiplegia	Essential hypertension; generalized arteriosclerosis; benign prostatic hypertrophy	Resection of seeping false aneurysm; stellate ganglion blocks
8 (H. K.)	52; M	Stroke with left-sided paralysis, 1948	Cerebral thrombosis with left hemiplegia	Generalized arteriosclerosis; bilateral (staghorn) renal calculi	Stellate ganglion blocks
9 (G. R.)	65; M	4 strokes since 1940 with paralysis of the right side; inability to talk	Right hemiplegia; aphasia	Generalized arteriosclerosis; essential hypertension; osteoarthritis; auricular fibrillation	None
10 (G. A.)	49; M	Stroke, 1949, with paralysis of right side	Right hemiplegia secondary to cerebral embolus	Rheumatic heart disease; syphilitic aortitis	None
11 (H. W.)	3 mo.; M	Convulsions since birth; 1 brother died age 5 mo. of thyroid tumor; 1 living sister is cretin, aged 6 years; mother takes 3 grains of thyroid daily	Cerebral atrophy; grand mal	Tuberous sclerosis	Craniotomy, January 1950
12 (A. E.)	67; M	Stroke, 1941; paralysis of right side	Generalized arteriosclerosis; cerebral thrombosis	Essential hypertension	None
13	54; M	Stroke, 1948, with paralysis of right side; inability to talk	Cerebral thrombosis; right hemiplegia; aphasia	Generalized arteriosclerosis	None

Postoperative Complications	Results	Progress	Postmortem
Transient edema of eyelids	EEG improved; spasticity decreased	Able to sit alone; better use of hands	Subdural hematoma (see Figure 15, showing brain); terminal acute cardiac dilatation from an A-V shunt at torcular Herophili
Nonfunctioning fistula	No improvement	Sent to Coldwater, Michigan	
Increased intracranial pressure; vomiting; weight loss; spinal fluid pressure 600 mm.	Spinal fluid pressure returned to normal; weight gain; suture lines narrowed	Decreased spasticity; vision	
None	Decreased spasticity	Still blind	
None	Improvement in use of arm and leg; returned to work	Collar size increased one size; dilatation of internal juguler vein (aneurysm?)	
Ruptured false aneurysm one month postop., silk sutures still working out of wound 8 months later	Decreased tremor and pain in left arm and leg; increased strength	Back to original hemiplegic state after closure of fistula, resection of aneurysm and ligation of right internal jugular vein	
Nonfunctioning fistula	No improvement	No change	
Buzzing noise in right ear	Improvement in speech and walking ability	Digitalized for auricular fibrillation and heart failure, flare-up of arthritis	
Auricular fibrillation; buzzing in right ear	Tingling in right leg	No change; auricular fibrillation	
None	No improvement, shunt down left sigmoid sinus and inferior saggital sinus to ophthalmic veins, convulsions continue	Dilated veins of scalp; edema of right eyelid and proptosis (Fig. 8)	Tuberous sclerosis; rhabdomyomas of heart (Figs. 7, 8, 10, 11, 12, and 13)
None	Improvement in walking; tremor, (right hand), decreased	Hoarseness; paralysis of left vocal cord; frequent colds; nervousness	
None	Improvement in speech and walking ability	Developed pneumonia while deer hunting	

TABLE 1.—

Patient	Age and Sex	History	Diagnosis	Accompanying Conditions	Additional Surgical Treatment
14 (B. M.)	13; F	Spastic since birth injury; schizophrenia diagnosed at Ypsilanti	Cerebral palsy; schizophrenia	Dental caries	Teeth extracted
15 (V. F.)	62; M	2 strokes, 1945 and 1948; right side paralyzed	Generalized arteriosclerosis	Benign prostratic hypertrophy	Stellate ganglion blocks
16 (N. H.)	64; M	Stroke, 1948; all extremities paralyzed	Spastic quadriplegia; aphasia; no sphincter control	Essential hypertension; generalized arteriosclerosis	None
17 (R. F.)	1 yr.; M	Spastic since birth	Bilateral subdural hematomas (?); cerebral atrophy	Agenesis of parietal lobes; extreme internal and external hydrocephalus at autopsy	Craniotomy
18 (A. F.)	56; M	Stroke, 1947; right-sided paralysis; inability to talk	Cerebral hemorrhage with right hemiplegia and aphasia	Essential hypertension	None
19 (J. A.)	6; M	Spastic; behavior problem	Cerebral atrophy	Subdural hematoma (?)	None
20 (M. B.)	43; F	Head injury, 1943	Right hemiparesis and aphsia following head injury in motor accident	Subdural hematoma, residual; convulsive seizures, grand mal type	None
21 (M. K.)	49; F	Right-sided paralysis and loss of speech following stroke	Right hemiplegia, aphasia following a cerebral hemorrhage	Ca of cervix cured (?) by roentgen and radium therapy; arteriosclerosis; hypertension	None
22 (E. M.)	46; F	2 strokes, 1945 and 1948; paralyzed in both arms and legs	Essential hypertension with quadriplegia following cerebral hemorrhage		None
23 (L. P.)	59; M	Left side paralyzed after stroke, 1948	Left hemiplegia following cerebral thrombosis	Generalized arteriosclerosis	None
24 (L. B.)	70; M	Paralyzed on right side since September 1949	Right hemiplegia, apasia following a cerebral hemorrhage	Generalized arteriosclerosis; benign prostatic hypertrophy	Numerous stellate ganglion blocks
25 (W. H.)	50; M	Right-sided paralysis following stroke	Right hemiplegia, aphasia following cerebral hemorrhage	Old burn scars (keloids); essential hypertension	Numerous stellate ganglion blocks
26 (C. Z.)	3 mo.; F	Convulsions since birth; "blue baby"	Cerebral atrophy		None
27 (E. J.)	49; M	Left-sided paralysis following stroke, 1949	Left hemiplegia and aphasia following cerebral hemorrhage	Generalized arteriosclerosis; essential hypertension; auricular fibrillation, chronic; decubitus ulcers	Numerous stellate ganglion blocks

Case Summaries (Continued)

Postoperative Complications	Results	Progress	Postmortem
Nonfunctioning fistula	None	Exacerbation of schizophrenia after 3 weeks; in remission at present	
None	Improvement in walking ability (Fig. 6)	Bilateral subconjunctival hemorrhages; another stroke; giddiness	
Aspiration of vomitus		Bronchoscopy	Aspiration bronchopneumonia involving all lobes
Nonfunctioning fistula	No improvement	Craniotomy; 650 cc. straw-colored fluid obtained	Cerebral agenesis; ventricular cystic degeneration (Fig. 14)
Nonfunctioning fistula	No improvement	No improvement	
Nonfunctioning fistula	No improvement	No improvement; still a behavior problem; less compulsive behavior	
Edema of eyelids; right-sided headache. relieved by occluding fistula	Improvement in speech and walking ability	Right-sided edema of face and right eyelid; injected sclera of right eye; one seizure; dilantin therapy reestablished	
None	Improvement in speech and taste		
Increased intracranial pressure	Better use of hands (?); giddiness	[illegible] uremia, [illegible]	
None	Improvement in walking ability	Returned to work; giddiness on turning suddenly	
Nonfunctioning fistula	No improvement	No improvement	
Nonfunctioning fistula (4-0 silk used instead of 6-0)	Extreme depression; schizophrenia (?)	No improvement	
Anasarca following intravenous procedure	Decreased number of convulsions	Sent to Coldwater, Michigan	
Heart failure	Died		Generalized arteriosclerosis; nephrosclerosis; coronary disease; sclerosis with near occlusion; cardiac hypertrophy

TABLE 1.—

Patient	Age and Sex	History	Diagnosis	Accompanying Conditions	Additional Surgical Treatment
28 (P. T.)	55; M	Right-sided paralysis, inability to speak and convulsions after 3 strokes	Right hemiplegia, aphasia and convulsions following cerebral hemorrhages	Essential hypertension; postoperative thoracolumbar sympathectomy syndrome; benign prostatic hypertrophy	None
29 (R. C.)	2 yr.; M	"Fits" since birth	Cerebral atrophy; birth injury	Premature infant	None
30 (C. J.)	27; F	Idiocy; spastic since birth	Developmental defect with athetosis (tension athetoid)	Idiocy; dental caries	None
31 (R. B.)	75; F	Stroke, May 1950	Left hemiplegia; aphasia	Generalized arteriosclerosis; carcinoma left breast 3 years postop.	None
32 (C. S.)	54; M	Stroke, 1945	CVA; left hemiplegia; aphasia; loss of sphincter control	Generalized arteriosclerosis; essential hypertension; cardiac hypertrophy	None
33 (N. T.)	56; F	Stroke, 1946	Essential hypertension; CVA; quadriplegia		None

TABLE 2.—*Results of Surgically Constructed Arteriovenous Fistulas*

	Total Number	Number Improved		Number Not Improved	% Improved
		Objective	Subjective		
Adults	22	5	4	13	22% objective 18% subjective 40% total
Children	11	2	0	9	18%

Operative Mortality: 2 deaths occurred in the immediate postoperative period in the series of 33 cases, 1 from aspiration bronchopneumonia and the other from heart failure and arteriosclerotic heart disease.

sinus, the inferior petrosal sinus, or the scalp or muscle veins.

SUMMARY AND CONCLUSIONS

1. Angiographically, in 80 per cent of the authors' cases intracranial shunts were revealed. These may produce serious complications and in themselves are contraindications to creation of an arteriovenous fistula. Of the 20 per cent of patients in whom the blood reaches the superior sagittal sinus, a certain number may be expected to show these additional shunts.

2. In the authors' series, roughly 1 out of 5 patients in whom the blood traversed the superior sagittal sinus might be ex-

Case Summaries (Continued)

Postoperative Complications	Results	Progress	Postmortem
None	Improvement in speech; formication, right hand	Can read aloud; belching and flatus; cardiac decompensation	
None	No improvement		
None	Quieter, easier to handle in hospital postoperatively	Quieter at home	
Nonfunctioning fistula	No improvement		
None	Talks more distinctly (?)		
None	None		

TABLE 3.—*Alterations Produced in Results of Queckenstedt Test and Spinal Fluid Chemical Values by Cervical A-V Fistula**

	Spinal Fluid Pressure	Compression						
		Right Jugular	Left Jugular	Both	Protein	Chlorides	Sugar	Cells
Preoperative normal	160	240	200	300	20–40	650–720	50–70	0–10
Immediate postoperative	265	150	400	400	60	N	N	N
Roentgenograms one week postop. demonstrate blood going through superior saggital sinus	120–180	100	480–550	550	N	N	N	N
Roentgenograms one week postop. demonstrate blood shunting across torcular Herophili	120–180	40	480–550	550	N	N	N	N
Fistula too large	600	100	600	600	102	792	N	N
Fistula too small	170	170	450	450	N	N	N	N
Ligation of internal jugular vein	170	170	450	450	N	N	N	N

*N represents the values given under "Preoperative normal."

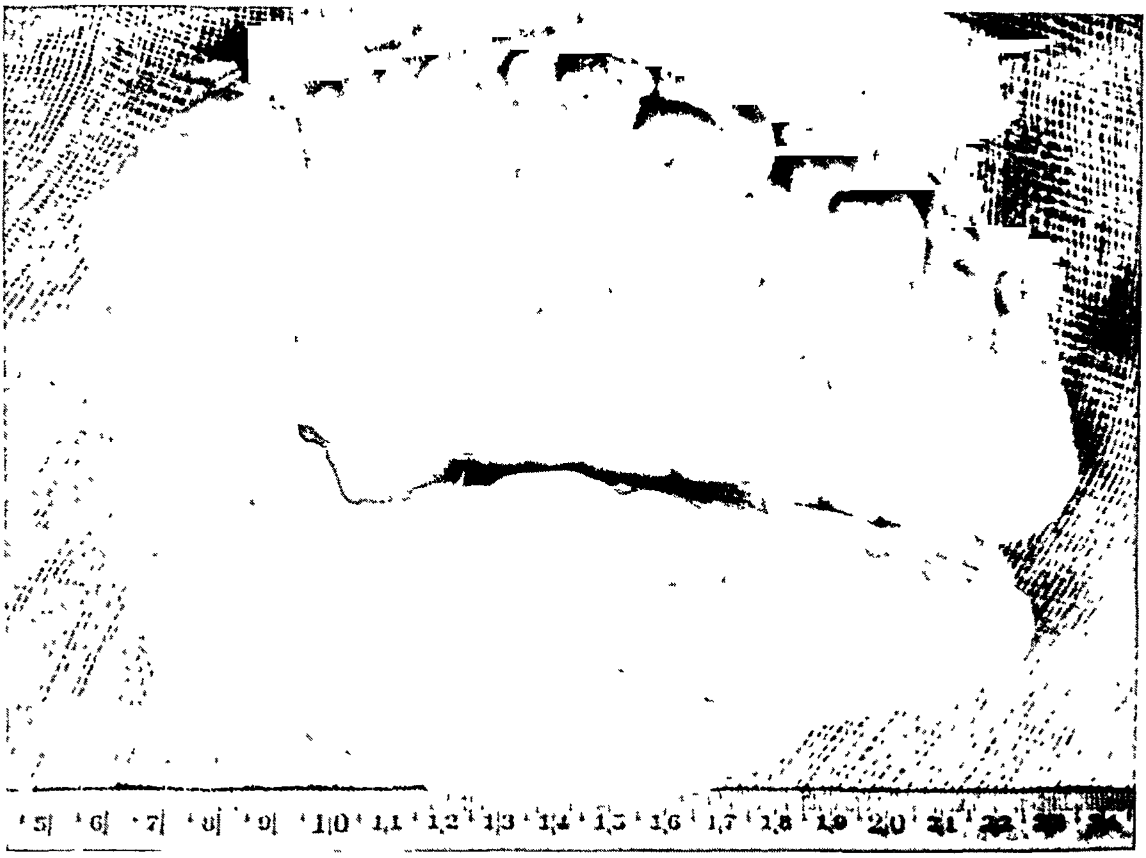

Fig. 13.—Gross specimen showing cerebral atrophy and umbilication of Gyri observed in Case 11. This condition was associated with tuberous sclerosis, grand mal, cardiac rhabdomyomas and tuberous sclerosis.

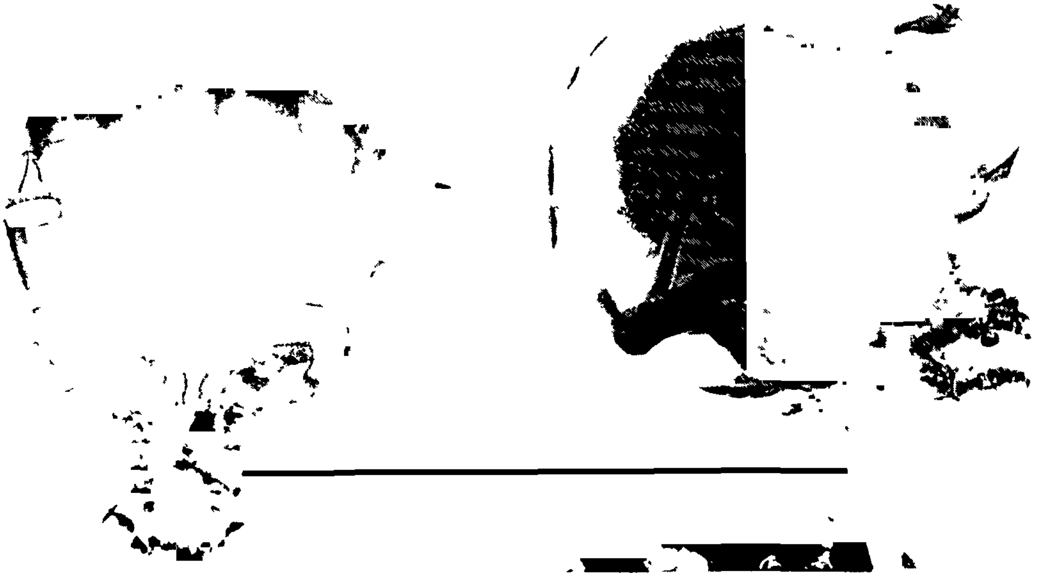

Fig. 14.—Blood shunted across at torcular Herophili and down through left internal jugular vein.

pected to benefit from a fistula if the other intracranial shunts listed did not occur.

3. In the authors' opinion, therefore, a retrograde angiogram through the right internal jugular vein should be taken prior to the construction of a fistula, to eliminate the 80 per cent of cases in which no improvement can be expected.

4. The anatomic variations in the internal jugular vein and the intracranial venous sinuses demonstrate why the various shunts can occur.

5. The changes produced in the results of the Queckenstedt test by a known arteriovenous fistula are such as to have possible diagnostic value in predicting an intracranial arteriovenous shunt.

RESUMEN Y CONCLUSIONES

1. El 80% de casos de los autores revelan angiográficamente derivaciones intracraneales, que pueden producir serias complicaciones y son for sí mismas contraindicaciones para la fístula arteriovenosa. En el 20% de pacientes en quienes la sangre alcanza el seno sagital superior, puede esperarse en determinado número la evidencia de estas derivaciones adicionales.

2. En la serie de los autores, 1 de 5 pacientes en que la sangre atravesó el seno sagital superior puede beneficiarse con la fístula, de no ocurrir las otras derivaciones intracraneales listadas.

3. En consecuencia, en opinión de los autores, debe tomarse un angiograma retrógrado por la vena yugular interna antes de crear una fístula, para eliminar el 80% de los casos en que no puede esperarse ninguna mejoría.

4. Las variaciones anatómicas en la vena yugular interna y los senos venosos intracraneales demuestran porqué pueden ocurrir las diversas derivaciones.

5. Los cambios producidos en los resultados de la prueba de Oueckenstedt por una fístula arteriovenosa conocida son de posible valor diagnóstico para producir una derivación arteriovenosa intracraneal.

RÉSUMÉ ET CONCLUSIONS

1. Dans 80% des cas rapportés par les auteurs, il existe des dérivations artério-veineuses intracraniennes qui peuvent produire de graves complications et qui sont elles-mêmes des contre-indications à la "fistule artério-veineuse". Dans 20% des patients chez qui le sang rejoint le sinus saggital supérieur on peut s'attendre qu'un certain nombre montreront ces dérivations additionnelles.

2. Dans les séries présentées par les auteurs environ 1sur 5 patients chez qui le sang traverse le sinus supérieur saggital peut bénéficier d'une fistule si les autres dérivations intra-craniennes connues ne se présentent pas.

3. Dans l'opinion des auteurs une angiographie rétrograde par la jugulaire interne droite devrait alors être prise, avant la formation de la fistule pour éliminer le 80% des cas chez lesquels on ne pouvait prévoir une amélioration.

4. Les variations anatomiques de la veine jugulaire interne et dans les sinus veineux intra-craniens expliquent l'occurence possible des diverses dérivations.

5. Les variations causées dans les résultats de l'épreuve Queckenstedt par une fistule artério-veineuse connue peuvent avoir une valeur diagnostique en prédisant une dérivation artério-veineuse intracranienne.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

1. In 80% der Faelle des Verfassers zeigte die Angiographie intrakranielle Umleitungen, die zu ernsten Komplikationen fuehren koennen und in sich selbst Gegenindikationen fuer die Anlegung einer arteriovenoesen Fistel darstellen. Es kann erwartet werden, dass von den 20% der Kranken, in denen das Blut den oberen sagittalen Sinus erreicht, eine gewisse Anzahl diese zusaetzlichen Umleitungen aufweist.

2. Man kann annehmen, dass unter den Kranken der Serie des Verfassers, in

denen das Blut den oberen Sagittalsinus durchfliesst, jedem fuenften mit einer Fistel geholfen werden kann, wenn keine der anderen angefuehrten intrakraniellen Umleitungen vorliegt.

3. Um die 80% von Faellen, in denen keine Besserung erwartet weden kann, auszuschalten, sollte daher nach Ansicht des Verfassers ein duch Einspritzung in die rechte innere Jugularvene gewonnenes retrogrades Angiogramm der Anlegung einer Fistel vorangehen.

4. Die anatomischen Abweichungen der inneren Jugularvene und der intrakraniellen Sinusse zeigen, warum die verschiedenen Umleitungen auftreten koennen.

5. Die durch eine nachgewisene arteriovenoese Fistel hervorgerufenen Veraenderungen im Ausgang des Queckenstedtschen Versuchs sind moeglicherweise von diagnostischem Wert in der Voraussage einer intrakraniellen arteriovenoesen Umleitung.

RIASSUNTO E CONCLUSIONI

1. L' 80% dei casi studiati dell'Autore anno rivelato a mezzo di angiografia deviazioni venose intracraniche. Tale deviazioni possono produrre serie complicazioni ed in se stesse sono controindicazioni alla fistola arterio-venosa. Del 20 per cento dei pazienti in cui il sangue raggiunge il seno saggittale superiore, un certo numero puo' presentare queste addizionali deviazioni.

2. Della serie dell-Autore, circa I su 5 pazienti in cui il sangue traversa il seno saggittale superiore, potrebbe beneficiare della fistola se le citate deviazioni mancano.

3. E' opinione dell'Autore per tanto che un angiogramma retrogado attraverso la giugulare interna destra dovrebbe essere preso previamente per eliminare l'80 per cento dei casi nei quali nessun miglioramento é da attendersi.

4. Le variazioni anatomiche della giugulare interna e dei seni venosi intracranici dimostrano perché la varie deviazioni possono occorrere.

5. Le modificazioni prodotte nei risultati della prova di Queckenstedt a mezzo di una nota fistola artero-venosa, sono tali da avere valore diagnostico nel predire una deviazione arteriovenosa intracrabica.

SUMÁRIO E CONCLUSÒES

1. Angiograficamente 80% dos casos dos autôres revelaram desvios intracranianos, os quais pódem produzir complicações sérias, sendo, em si proprias, contraindicações á fistula arterio-venósa. De 20% de pacientes nos quais o sangue alcança o seio sagital superior, um certo numero deve provavelmente mostrar esses desvios adicionais.

2. Nas series do autôr, aproximadamente um dentro de 5 pacientes nos quais o sangue atravessou o seio sagital superior póde se considerar como apto a beneficiar-se de uma fistula, si os outros desvios intracranianos mencionados não ocorrerem.

3. Na opinião do autôr, portanto, um angiograma retrógrado, atravéz da veia jugular interna direita, deve ser tomado antes da execução de uma fistula para eliminar os 80% de casos nos quais nenhuma melhóra póde ser esperada.

4. As variações anatomicas da veia jugular interna e os seios venosos intracranianos demonstram que os varios desvios pódem ocorrer.

5. As alterações produzidas nos resultados do test de Queckenstedt por uma fistula arterio-venósa conhecida são tais que possibilitam a previsão de um desvio arterio-venôso intracraniano.

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Operative Treatment of Osteoarthritis of the Hip Joint

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FROM a clinicoroentgenologic point of view, osteoarthritis of the hip may be divided into two groups.

In Group 1 the roentgenograms show narrowing of the joint space, atrophy of bone with atrophic cysts, and only a few osteophytes. The joint capsule demonstrates severe changes caused by aseptic inflammation. There is severe pain but only slight limitation of movement. The sedimentation rate of the erythrocytes is often high.

In Group 2 the roentgenograms demonstrate pronounced hypertrophy of the femoral head. The joint shows definite deformities caused by osteophytes. Atrophic cysts are present only in subchondral parts of the bone, and they are not pronounced. The bone tissue is sclerotic; the capsule shows only slight irritation. Limitation of movement is prominent, and pain is secondary. Sedimentation is normal.

It goes without saying that the symptoms of coxarthrosis deformans gradually merge into one another and that their forms are often rather vague. This, however, does not alter the fact that one is able to distinguish the atrophic and the hypertrophic form; on the one hand the patients complain chiefly of pain, and on the other hand they complain of limitation of movement. This practical distinction is very important to the surgeon, as it allows him to plan suitable therapy and to define clear indications for the different types of operation.

Pain is the earliest symptom of osteoarthritis of the hip. At a later stage there are limitation of movement and instability of the joint. Relief of pain, therefore, is the first step of any treatment, whether nonoperative or surgical. Increase of movement by surgical means follows this treatment, as well as an attempt to stabilize the joint.

The pain of osteoarthritis is due to articular disorder but also to secondary changes of the soft tissues, including the muscle. The articular pathologic changes affect the nerves supplying the hip joint, so that neuralgia develops from irritation. The main trunks—the sciatic, the femoral and the obturator nerves—are painful. The muscles are hypertonic, though afterward they become atrophied.

The well-known limitation of movement results from pathologic changes in the hip itself: from the degeneration of the cartilage and also from the muscular spasm for relief of pain by blocking movement. The instability of the joint is a result of degeneration of the hip cartilage, but also of atrophy of the muscles.

Symptoms.—Degeneration of cartilage may be caused by injuries, malformation of the hip, wrong weight-bearing, or damage to the cartilage caused by inflammation of the joint. Necrosis of the cartilaginous cells causes a suspension of such shed necrotic cells in the synovial fluid of the joint, while the albumins of the broken-down cells irritate the synovial lining, inducing aseptic inflammation. This interferes with the production of synovial fluid, which no longer has its normal qualities or its normal degree of acidity; moreover, it loses its normal viscosity, and also it is produced in abnormal quantities. In such a case the capsule is painful, for two reasons: (1) owing to interference with the normal make-up of the synovial fluid it is irritated, asepti-

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cally inflamed, infiltrated, and edematous; and (2) the increased quantity of synovial fluid gives rise to mechanical tension of the capsule.

Apart from changes of the capsule, one also observes changes of bone. Subchondral or more central atrophic cysts are painful. Later, osteophytes develop at the edge of the joint.

The pain attending arthrosis deformans must, therefore, be looked upon as both capsular and osseous pain. The latter pain originates partly in the bone stripped of its cartilage, and partly in the cysts.

Limitation of movement in the first phase has a purely muscular origin; in the second phase it arises in the joint owing to capsular changes. Only in the third phase is it caused by morbid conditions of the bone.

Operative Methods.—When, in a case of arthrosis deformans, the pathologic changes are such that conservative treatment offers no hope of success, one must resort to surgical treatment. I shall mention only those methods that have been applied in this department.

Of the minor operations, the first to be mentioned is forage of the bone and decapsulation, nowadays combined by myself and my associates with denervation of the joint.

Of the definite and more comprehensive operations I would specify arthroplasty and arthrodesis.

Our experience embraces a series of 178 cases. Since 1945 we have been able to perform 89 denervations (partly combined with decapsulation); we were able to follow them up for a period up to five years after the operation. Since 1947 we have had 92 follow-up cases of arthroplasty with the vitallium cup of Smith-Petersen (66 cases), or the plastic prosthesis of Judet (our experience of the latter [26 cases] does not go back before 1949). We have only 13 cases of arthrodesis; this operation has to a large extent been superseded. Forage and decapsulation as independent operations were performed only 5 times. A regular follow-up examination of the patients will enable us to evaluate the results and to define the indications more carefully.

When *forage* is done, graduated Steinmann pins are introduced into the femoral head (with roentgenographic control), so that the cysts that are to be removed are struck. With the Steinmann pin as a guide, a hollow drill is introduced into the cysts. The drill, with contents and the Steinmann pin, is then retracted, so that there remains a wide canal extending into the cysts. Forage takes place in various directions.

The contents of the hollow drill are pressed out with a plunger, and healthy spongiosa out of it is introduced into the canal. If necessary, cancellous chips are removed for this purpose from the pelvis. For after-treatment a plaster cast is put on for about four to six weeks, depending on the extent of the forage. At the end of this period the leg may bear weight.

Decapsulation is performed through a straight incision along the outer rim of the sartorius muscle, from the spina iliaca ventralis, about a hand's breadth downward. After the muscular mass has been forced asunder, the joint capsule is excised as widely as possible on the anterior side, from the rim of the acetabulum as far as the trochanter major muscle.

At first we also started capsulectomy from a second incision on the posterior side, after cleaving the musculi gemelli, as mentioned by La Chapelle. Later, however, we abandoned this operation, as it is often hampered by hemorrhage from varicose blood vessels. It was moreover observed by us that denervation of the posterior part of the hip joint always has satisfactory results. At present, therefore, decapsulation is done only in front, while at the back this operation is supplemented with posterior denervation performed at the same time.

Denervation goes back to Camitz's suggestion in 1933, when he resected the obturator nerves; it was afterward supplemented by Tavernier, who added re-

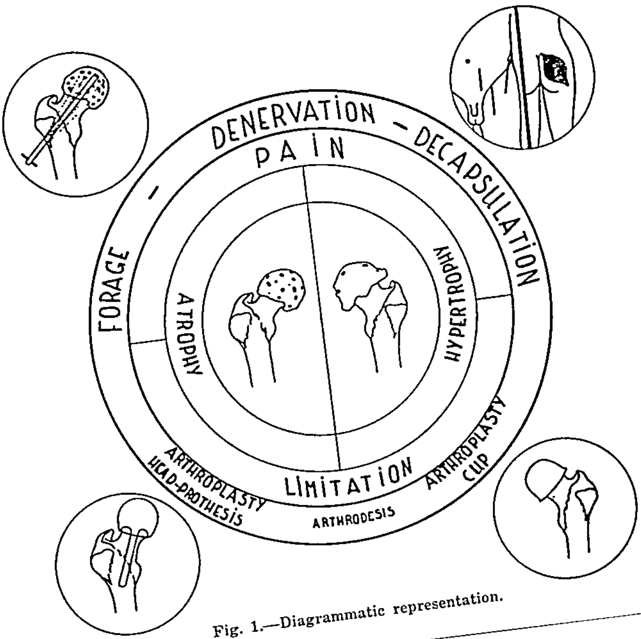

Fig. 1.—Diagrammatic representation.

section of the ramus quadratus femoris, nervi ischiadici. In a number of publications we have shown that this denervation is complete only when the arthral branches both of the obturatirius of the ischial nerve and of the femoral nerve are cut. Denervation is carried out at the same time. The obturator nerve is resected from an intrapelvic pararectal incision. The femoral nerve is exposed from a straight incision above the femoral artery, and its rami articularis are then resected.

After the incision has been closed the patient is turned round and an oblique incision across the buttock is made, exposing the ischial nerve. Immediately below the piriform muscle, on the ventral side of the ischial nerve, one observes the origin of the ramus quadratus femoris, which is also resected. This denervation, which is the usual method in our clinic, and the technic of which we have described in different publications, is complemented during the after-treatment by a series of paravertebral injections of procaine hydrochloride, which seem to us essential.

Experience has shown that these paravertebral novocaine injections are sufficient to restore the balance of the vegetative nervous system. Sympathectomy has not proved necessary.

Arthroplasty is carried out by us in practically the same way as described by Smith-Petersen. We apply a small incision according to Smith-Petersen, without disinsertion of the rectus femoris muscle, and then we resect the capsule completely, chiseling away the calcified limbus. The head is next luxated and touched up, and the socket is frayed. Our after-treatment also differs from Smith-Petersen's technic, as we keep the patient only two weeks in plaster of paris, and then start active exercise in bed, in the swimming-bath, and finally on the ground. After six weeks the patient has progressed to such a degree that he can leave the hospital walking.

Arthroplasty with a femoral head prothesis according to Judet is carried out by means of a straight incision along the sartorius muscle, commencing at the spina iliaca ventralis. The head is chiseled off, and the capsule is resected as much as possible. If necessary the acetabulum is frayed, after which the head prosthesis is placed upright on the femoral neck. The after-treatment is like that for vitallium arthroplasty.

Arthrodesis is performed by us by the intra-articular technic, with fixation by means of Watson-Jones' pin.

Starting with a Smith-Petersen-Matthieu incision, the capsule and the cartilage of the hip are removed. Then a large Watson-Jones pin is driven as straight as possible from the trochanter major into the pelvis.

Arthrodesis without the removal of the cartilage holds out no hope of success. This technic is often completed by taking a wedge out of the upper part of the acetabulum and the femoral head, and chiseling the trochanter major, which is then introduced into the defect.

After-treatment consists of application of a long plaster cast, with hinges for the knees, and immobilization for three months.

Indications. — These operations have their clearly defined medical indications, which are often influenced by social considerations. Still, we are able to give general rules, which may be modified for the particular case. The patient's age, his general physical condition, his psychic condition, his general mental make-up and his power of resistance all play a part when one has to select an operation requiring a protracted and fatiguing after-treatment. It is therefore necessary to study the patient and to determine whether he can tolerate the physical exercises necessary for successful therapy.

Localization of arthrosis deformans plays an important part in getting at the indication. This condition may be unilateral or bilateral; the vertebral column or the knee may also reveal joint changes, so that ominous stiffening of the lumbar portion of the spine or of the knee would contraindicate a stiffening operation upon the hip joint. Finally, an important part is played by the type of coxarthrosis deformans. Not only the clinical picture, with pain and limitation of motion, but also the pathologic and anatomic aspects of the case must be considered in deciding on the type of operation, especially arthroplasty, that is to be carried out.

Forage, denervation and decapsulation may be considered palliative operations. Still, they have their own indications, and one must not assume that incipient osteoarthritis is the only reason to perform one of them. As we have divided the conditions into two clinical types, it does not seem necessary to say that these operations deal with painful osteoarthritis of the hip.

The pain, having its origin in pathologic changes of the joint capsule, makes it necessary to resect sensitive nerve fibers. This is the basic operation for the relief of pain.

A wide experience of denervation of the hip joint, embracing 87 cases, has taught us, however, that this operation guarantees a complete result for a short time only. After one year there was no more pain in 63 per cent of the cases; in 27 per cent the result was satisfactory, and in 10 per cent the operation failed and the condition was bad. After two years there was a relapse in 40 per cent of the cases. We have observed that in spite of very careful technic the relapses always occur in the anterior part of the hip joint. The posterior part, or the capsule supplied by the ischial nerve, remains free from pain. This fact compels us to modify the indication; and as we know that in cases of osteoarthritis the capsule reveals considerable pathologic change, it is clear that an attempt will be made to eliminate the pain by removing the diseased capsule. This is done by means of anterior decapsulations. We have abandoned the idea of posterior decapsulation, as this operation carries technical objections and the musculature is injured. Moreover, posterior denervation guarantees absence of pain in that part. There are additional considerations; denervation can be carried out with the certainty of success only when we cut the obturator nerve intrapelvically. Extrapelvic resection of the sensitive branch is not sufficient, as both contain sensitive fibers. In incipient cases, however, there are justifiable objections to an operation in the pelvis; for in that case the entire nerve is eliminated, and the adductors are to a large extent paralyzed. This may lead to abduction contracture of the hip. It goes without saying that things are different when abduction has already disappeared and there is a tendency to adduction contracture. This is not at all infrequent in the middle stage of arthrosis deformans. In these circumstances it is appropriate to resect the obturator nerve, which should be done by an intrapelvic approach. It is frequently a laborious task to find the femoral branches, and in this fact we find an indication in the later stages to add decapsulation combined with denervation (obturator nerve and ramus nervi ischiadici). In so far as we establish an indication to resect the obturator nerve, we must keep in mind that we thereby exclude the possibility of later arthoplasty. For arthroplasty it is indispensable that the entire musculature remain, so that the muscular balance may not be disturbed. In case of failure we should be left only with the possibility of arthrodesis afterward. These things are carefully considered in establishing the indication. As we are reluctant to perform arthrodesis, resection of the obturator nerve should be carefully weighed. We may do this only for older patients, whom we dare not burden with a serious operation and exercise therapy. In those cases, therefore, in which we carry out the operation as a palliative measure, we limit ourselves to posterior denervation with anterior decapsulation.

On a former occasion I pointed out the importance of sympathetic nerve block. There can be no doubt about the innervation of the hip by this nerve, and therefore sympathetic blocks should be carried out by way of after-treatment. Curiously enough, when we commenced to establish our indication we observed cases in which the pain disappeared after the block, only to return later. On further examination these proved to be the cases in which cystic changes were present in the bone. The spongy substance of the femoral head and neck is certainly innervated by the sympathetic nerve. This is clear from

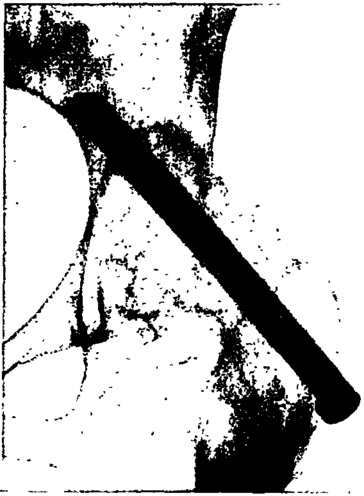

Fig. 2.—Arthrodesis of hip with Watson-Jones nail in a case of severe osteoarthritis.

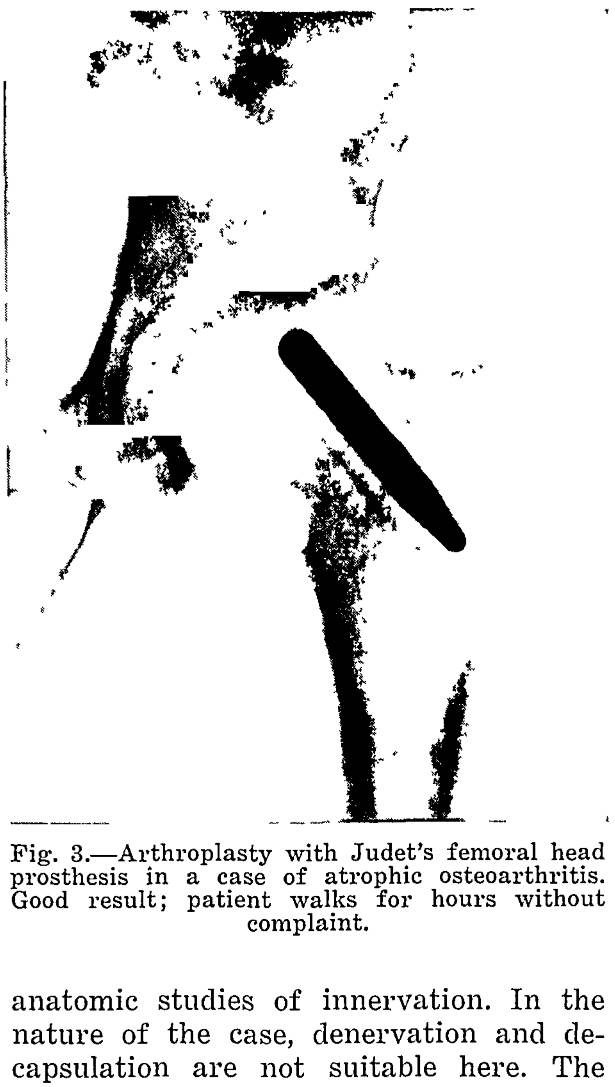

Fig. 3.—Arthroplasty with Judet's femoral head prosthesis in a case of atrophic osteoarthritis. Good result; patient walks for hours without complaint.

anatomic studies of innervation. In the nature of the case, denervation and decapsulation are not suitable here. The cystic changes in the bone are the cause of pain. Apart from denervation and decapsulation, something else must be done, aiming at recovery of the structure of the bone. These are the cases in which forage is indicated. In this way the cysts must be cleared up, and restoration of the spongy structure must be attained. It goes without saying that this operation is also combined with decapsulation and denervation, as in these cases the capsule is also affected and therefore gives rise to pain.

In order to give a clear indication for forage we can now reverse our experience of sympathetic nerve block. If, for example, the pain disappears after a preoperative block, forage is justified; it is indeed indicated. When we now recapitulate the aforementioned facts, we may conclude that denervation-decapsulation is called for in cases of the incipient hypertrophic form of arthrosis deformans, or in cases at a later stage, when for certain reasons a more extensive operation must be abandoned. If, however, the condition is atrophic and therefore attended with cystic changes of the bone, forage should be carried out also in the case of palliative treatment.

This brings us to definite and major operations. They are the arthrodesis and arthroplasty of Smith-Petersen and of Judet. It may be true that these operations are occasionally performed to eliminate pain. Their proper indication, however, is serious limitation of movement, which as a matter of course will never be unaccompanied by pain in cases of arthrosis deformans. At present arthrodesis has very limited indications. Its application is greatly lessened, owing to arthroplasty. Strictly speaking, it is indicated only for the older patient with a stiffened and painful hip. This holds good if there are no contraindications, such as the fact that the condition is bilateral. It is clear that arthrodesis can also be carried out in those cases in which there is no stability of weight, and in which there is no other way to restore it. It need hardly be emphasized that arthrodesis is absolutely contraindicated in cases of bilateral arthrosis deformans coxae. In our opinion arthrodesis is also contraindicated in the presence of arthrosis deformans of the lower lumbar vertebrae, as this condition leaves no possibility of compensating movement of the hip by movements of the lumbar part of the spinal column. Stiffening of the knee also contraindicates arthrodesis. Arthrodesis should never be carried out in young persons, since it is a social handicap.

The indications for arthrodesis of the hip in cases of arthrosis deformans lead again to consideration of the condition of the bone; if there are cystic changes in the bone, it is possible that their remaining would nullify the results of the arthrodesis. Although the pain caused by movements of the joint would disappear, the patient would retain the pains in the bone and the sympathetic nerve. In the course of the operation, therefore, it is necessary to clear away the cysts. The capsule should be resected in its entirety, being a diseased organ.

At first we reserved arthroplasty only for the bilateral condition, or for patients with arthrosis deformans of the spinal column or the knee, but nowadays arthroplasty has come to the fore, owing to wider experience and favorable results. At present it is the operation of choice in cases of arthrosis deformans with serious limitation of movement. The presence of arthrosis deformans vertebrae lumbalis or stiffening of the knee-joint lends great support to the indication for this operation. The favorable results with regard to pain speak for wider indications. In these cases the final decision is given by the social side of the problem, as one generally has to do with persons following some calling or profession. Arthroplasty requires very stringent indications. It must be carried out in those cases in which an increase of movement of the hip joint may reasonably be expected. In other cases a palliative operation often yields a more satisfactory result.

Arthroplasty is contraindicated only for patients with some vitium cordis, as the burden imposed by the postoperative physical exercise is considerable. The greatest care must also be exercised when the diagnosis of arthrosis deformans is not absolutely certain, and when the changes in the hip joint are caused by spondylosis ankylopoietica. In nearly all these cases one may expect stiffening of the hip. It is also necessary to observe the greatest care when making a differential diagnosis with respect to tuberculosis, so that arthroplasty is not carried out in a joint with secondary arthrosis deformans based on coxitis, as it is probable that this would be followed by a flare-up of the inflammation.

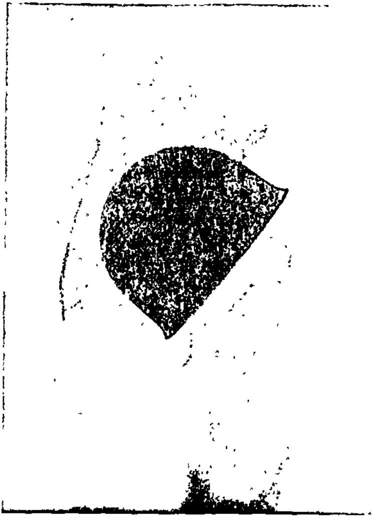

Fig. 4.—Arthroplasty with Smith-Petersen's vitallium cup. Full function after two and one-half years, no pain, no limping. Patient asked for same treatment of other hip.

The subject that occupies our attention most at present is the differential indication for arthroplasty with the vitallium cup of Smith-Petersen and the femoral head prothesis of Judet. There is no doubt that each method has its own indications, and should be used accordingly. There is no question that one is superior to the other and should be abandoned in favor of the other.

The benefits of preservation of normal preformed bone speak for the vitallium cup; the possibility of resecting the diseased bone and replacing it artificially speaks for the head prosthesis. This is the essential difference. Generally speaking, arthroplasty with the vitallium cup is carried out in cases of the hypertrophic form of arthrosis deformans, the head prosthesis being resorted to for atrophic forms with cysts.

It would seem to us that arthroplasty according to Smith-Petersen requires a femoral head of good quality, if postoperative necrosis of the head is to be avoided and pain eliminated with certainty. When the femoral head is atrophic and full of cystic changes, the Smith-Petersen technic does not promise good results. It is then more efficient to resect the head completely and to replace it with a head prosthesis according to Judet. This prosthesis is inserted in the stump of the femoral neck and the trochanter; but the quality of the bone of the femoral neck and trochanter should be good, in order to render proper fixation possible. When this is not the case, one must conclude that arthroplasty is not practicable; the best course would be to resect the femoral head and to carry out osteotomy according to Batchelor. In all cases, however, the capsule should be radically removed.

SUMMARY

Surgical treatment of arthrosis deformans of the hip joint consists of palliative and definitive operations: forage; decapsulation and denervation; arthroplasty, and arthrodesis. The technics of these operations are briefly described and the indications and contraindications discussed.

ZUSAMMENFASSUNG

Die chirurgische Behandlung der Arthrosis deformans des Hueftgelenks besteht in palliativen und endgueltigen Eingriffen: Veroednung; Dekapsulation und Denervierung; Gelenkplastik; Gelenkversteifung. Die Techniken dieser Operationen, ihre Indikationen und Gegenindikationen werden kurz beschrieben.

RÉSUMÉ

Le traitement chirurgical de l(arthrite déformante de la hanche est autant curatif que palliatif. Le forage, la décapsulation avec énervation, l'arthoplastie et l'arthrodose sont autant de traitements. On y décrit le processus opératoire, ses indications et contre-indications chirurgicales.

RESUMEN

El tratamiento quirúrgico de la artrosis deformante de la cadera consiste de operaciones paliativas y definitivas: perforación, decapsulación y desnervación, artroplatía y artrodesis. Se describe sucintamente la técnica de estas operaciones, así como las indicaciones y contraindicaciones.

RIASSUNTO

Il trattamento chirurgico dell'artrosi deformante dell'anca consiste di misure palliative o interventi definitivi: Scapsulamento ed enervazione; artroplastica e artrodesi. Le relative tecniche sono brevemente descritte insieme con indicazioni e controindicazioni.

SUMÁRIO

O tratamento cirurgico da artrite deformante da bacia consiste em operações definitivas ou paliativas; forragem; decapsulização e denervação, artroplastia e artrodése. As tecnicas dessas operações são descritas por alto, bem como suas indicações e contra-indicações.

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Suprapubic Prostatectomy

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ALTHOUGH two American surgeons, Belfield and Fuller, as well as one English surgeon, Macgill, performed this operation in the past century, the honor and credit of perfecting it as a classic surgical achievement go to Freyer, who advocated and popularised the method in the beginning of this century. A few decades ago Sir Thomsan Walker devised certain modifications and styled his improved technic the "open method" of this operation. The method was later modified by Harris.

Surgical Anatomic Background.—Altered anatomic conditions are produced in the prostate gland and its capsule as a result of pathologic changes. Small multiple fibroadenomas, which arise in the substance of the gland and mark the beginning of this pathologic change ultimately coalesce and compress the original normal prostatic tissue to the periphery, which in turn forms a false capsule surrounded by the true anatomic capsule. Enucleation of the enlarged fibroadinomatous gland is effected from the false capsule, the true anatomic capsule being left behind, intact.

Indications.—The indications for this operation are (*1*) permanent or recurrent obstruction to the flow of urine, resulting in retention of urine or the phenomena of residual urine; (*2*) urinary irritations resulting in persistent or frequent dysuria; (*3*) persistent or recurrant urinary sepsis accompanied with prostatic obstructions resulting in cystitis, pyelitis, etc.; (*4*) frequent or persistent attacks of hematuria from an enlarged prostate gland, and (*5*) repeated stone formation as a result of prolonged prostatic obstruction.

Contraindications. — The contraindications are (*1*) definitely established signs of renal failure; (*2*) advanced myrocardical degeneration and other organic heart lesions; (*3*) persistent pulmonary complications, such as chronic bronchitis and hypostatic congestion not yielding to treatment; (*4*) markedly severe general asthenia and mental incoherence, and (*5*) a small, hard, fibrosed and fixed prostate gland.

Preoperative Considerations and Preparation of the Patient.—Prior to an operation of this magnitude, which harbors possibilities of some shock, hemorrhage and strain on the renal system, it is of the utmost importance that the functions and conditions of relevant systems should be investigated and set right before hand. I follow a routine plan of investigation in every case: urine examination (especially for urinary sepsis, total daily output of urine, estimation of blood-urea, and total amount of residual urine), blood pressure and blood picture for anemia, together with a study of the condition of the heart and the lungs. A urea clearance test is done in some cases only.

If the renal efficiency is impaired, as manifested by a high blood urea level, a small output of urine and a dry tongue, the bladder is drained by indwelling catheter for some time, until renal efficiency improves. If there is marked urinary sepsis, urinary antiseptics, such as cylotropin, and antibiotics, such as sulfa drugs and streptomycin, are given, while the bladder is drained and irrigated daily. Copious fluids are given by month to flush the kidneys.

Apart from improving the local condition of the urinary system, the anemia

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and general weakness are corrected by blood transfusion when necessary, supplemented by vitamins, iron, liver extract and other general tonics. If the blood coagulation time is found to be defective, it is corrected by administration of calcium, vitamin C and hemoplastic serum injections. Blood transfusion also insures excellent coagulation.

Classification of Surgical Technics.—The classic operation of suprapubic prostatectomy is classified into three main varieties: (a) blind enucleation from a small suprapubic incision (Freyer's method); (b) open operation involving wider opening of the bladder and reconstruction toilet of the prostatic bed (Thompson-Walker's method), and (c) Harris's modification of Thompson-Walker's method by complete closure of the bladder incision at the end of the operation, providing urethral drainage. I have always preferred and practiced Frayer's method, and I have found no reason to give it up or replace it by any other technic except in a few cases of small, hard, fibrotic prostate, for which I prefer perurethral endoscopic diathermic resection of the prostate by MacCarthey's prostatic resectoscope. At this stage, it must be frankly admitted, no single, stereotyped and fixed operative procedure is universally suitable. Freyer's method, however, remains the method of choice for the majority of surgeons in the majority of cases of disease of the prostate, a fact corroborated and supported by Walter Galbraith, last year's President of the Urological Section of the Royal Society of Medicine, who made a significant generalization in this connection: "Freyer's method is undoubtedly the most commonly practiced method of prostate operation by general surgeons today for dealing with majority of prostatic enlargements."

As I have no experience with the open suprapubic method of Thompson-Walker's prostatectomy or Harris's modification thereof, I shall confine myself to the description of Freyer's method as I practiced it.

Stages of the Operation.—This operation can be performed in one or two stages. The former is more risky than the latter, though it has the advantage of a shorter period of convalescence.

Operation in One Stage: In a few exceptional cases, when the patient comes fairly early for treatment and his renal efficiency is not impaired; if there is no evidence of urinary sepsis and if the general condition is excellent, it is worth while to undertake this operation in one stage. Although one-stage operation has certain disadvantages — greater shock, greater strain on the urinary function and a greater chance of urinary infection —it has definite advantages also; it involves a shorter convalescence, and shorter stay in bed and in the hospital, and consequently a lessened chance of deterioration of mental stamina. Also, as a matter of course, it obviates the double ordeals of anesthesia and operation on two different occasions.

Operation in Two Stages: In actual practice, since the great majority of patients come for treatment after their renal function is already impaired, marked urinary sepsis already established, and general health already deteriorated, I have considered it safer and therefore preferable to operate in two stages, performing suprapubic cystostomy at the first stage to drain the bladder, with a view to relieving the strain on the kidneys and improving their function, and then enucleating the prostate at a second operation after an interval of about a fortnight; this interval varies according to the individual case. As the condition of the urinary system improves, the tongue becomes moist, total urinary output increases and the percentage of blood urea falls. The general condition also improves as symptoms of dysuria disappear.

Operative Technic: In most cases I perform the two-stage operation by Freyer's method. I shall describe here the technic of this operation as I practice it, the after-treatment I follow as a routine, the complications I have actually met with and various difficulties I have encountered.

First Stage: 1. The Anesthetic: For the first stage of this operation, I prefer local infiltration anesthesia with 1 per cent novocaine solution. I have found this choice admirable in all respects.

2. The Incision: I use a short vertical suprapubic median incision, with its upper end at the midpoint between the umbilicus and the symphysis pubis and lower end on the symphysis.

3. Subsequent Stages: After the incision, the recti muscles are separated; the peritoneum is pushed away from the bladder, which is incised and its interior explored to determine the size, shape, texture and fixity of the prostate and to examine the condition of the vesical cavity and note any evidence of stone or pouch formation. Thereafter the bladder is drained by a self-retaining suprapubic catheter, and the wound is closed after drainage of the cave of Retzius has been provided at the same time by a separate tube.

Treatment After First Stage: In most cases the bladder is drained along a suprapubic self-retaining catheter by siphon-action in a lotion bottle tied to the bedside. However, in some cases this simple method of drainage is not satisfactory or adequate, and in such cases Cathcart's suction drainage is substituted and has been found excellent. In every case the bladder is irrigated once daily as a routine and drinking of copious draughts of liquid is encouraged. Treatment with urinary antiseptics and antibiotics is continued.

Complications After First Stage: No complications worthy of note are encountered as a rule after the first stage of the operation, but in rare cases urinary fever, a sign of spreading and ascending urinary sepsis, may be encountered at the very outset, or hypostatic pneumonia may endanger this stage from the very first day. Brushing of the intravesical portion of the suprapubic catheter against the congested prostate may cause spontaneous bleeding from the bladder. All these complications are rare and tend to be easily controlled.

Investigation After First Stage: As a routine, the blood urea level is estimated once a week after the first stage and its gradual fall is noted. I do not consider any patient fit for the second stage of the operation until the value for blood urea has fallen below 35 mg. In some cases, when renal efficiency seems doubtful and the blood urea index is high, I rely more on a urea clearance test before deciding to proceed with the second stage. A clean, moist tongue is also a fairly good rough indication of improved renal function.

Second Stage: In the majority of cases I undertake the second stage during the third week after the first stage. During the interval I give one or two blood transfusions whenever necessary or indicated.

1. Anesthetic: The choice of the anesthetic for the second stage of the operation depends upon the general condition of the patient. If there is a well-sustained blood pressure above 120 systolic and 90 diastolic, with a fairly healthy myocardium, I prefer spinal anesthesia with Barker's stovain solution, 1.5 cc. In actual practice, however, I have found that the average blood pressures of our hospital patients are far from ideal; therefore, in the presence of low blood pressure levels I use general anesthesia with ether-chloroform-oxygen, by the closed method. I have had no cause to regret the use of either of these methods for the second stage of this operation.

Steps of Second Stage: A prostatic catheter or a cannula is first passed per urethra, and the bladder is irrigated along it through the suprapubic catheter, which is removed after the irrigation is over. One assistant, standing on the right side of the patient, then passes his index finger into the rectum of the patient and with it pushes and presses the whole prostate forward and upward, steadying it at the same time. Standing on the left of the patient, I insert the index finger of my right and my left hand alternatively through the suprapubic opening to perform enucleation of the prostate. The process of enucleation with the fingers is begun methodically; the right lobe is separated first, the left lobe next and the posterior segment with the middle lobe and the inferior attachments last. Although separation of both the lateral lobes and the middle lobe is fairly easy from all aspects in the majority of cases, the utmost strain is felt in severing the urethral attachment to the gland at its inferior surface, which lies somewhat lower down, and rather deep for adequate manipulation by the fingers.

As soon as enucleation of the prostate from its pathologic capsule has been completed, the separated gland, either as a whole or in two pieces, slips into the cavity of the bladder. At this stage the assistant withdraws his finger from the rectum. The displaced and separated prostate is removed from within the vesical cavity by special forceps. In most cases there's hardly any appreciable bleeding. The bladder is irrigated by means of a large urethral cannula with hot lotion, while the eye of the irrigating cannula lies in the prostatic bed. The prolonged and continuous irrigation with hot lotion helps to check the bleeding and at the same time removes any blood clots that may have formed or any débris of torn capsule that may have loosened.

A large-bore drainage tube is finally established in the vesical cavity for its adequate drainage, and the wound is closed.

Difficulties Encountered During Second Stage: In most cases the manipulations of this stage are carried out with utmost ease, and the time involved is only a few minutes. However, difficulties do arise in some cases which chiefly depend upon corpulence of the patient, thickness of the abdominal wall, the depth at which the prostate is situated, the relative length of the surgeon's fingers, and the fixity and hard, fibrosed texture of the gland, etc. In extremely obese patients the excessive thickness of the abdominal wall increases the relative depth of the prostate, so that fingers of normal length will find it cumbersome to manipulate the gland satisfactorily, and its complete enucleation becomes a tiring and prolonged ordeal. Also, if the prostate is relatively small, hard, fibrosed and fixed, it is very difficult and sometimes impossible to separate it from its adherent capsule. Such difficulties call for patience, perseverance, tactful handling and determination. In spite of all these resources there will be a few cases, especially those in which the prostate is hard, small and fixed, in which this method of enucleation must be discarded altogether in favor of some more suitable procedure, such as endoscopic diathermic resection or perineal prostatectomy.

After-Treatment: (a) General: The usual occurrence of a variable degree of shock is treated as a routine by (1) dextrose-saline intravenous infusions, which also activate renal function and promote urinary secretion; (2) elevation of the foot of the bed, which also checks venous oozing from the prostatic bed; (3) an electric heat cradle, which also aids cutaneous excretion, and (4) adrenal-cortex injections. At the same time the patient is encouraged to drink plenty of fluids by mouth.

(b) Local: The postoperative suprapubic drainage of the bladder is carried out as a routine by the siphon method. If this is unsatisfactory it is replaced by Cathcart's suction drainage by hydrovacuum. If the tube is blocked by blood clot it is irrigated; one such irrigation of the bladder is carried out daily as a routine, through a suprapubic tube, for two days, after which, when all the reactionary bleeding has completely stopped and the urine is free from blood, the tube is removed. Thereafter Hamilton-Irwing's apparatus is worn, or a small self-retaining catheter is substituted, or the patient is kept dry by regular dressings every four hours. The wound contracts appreciably in about ten days, after which a large bougie is passed per urethra and the prostatic bed and bladder are irrigated thoroughly by urethral catheter. From that time onward the patient gradually begins to pass urine normally. In some cases, when the suprapubic wound is slow in contracting, I prefer to tie in an india-rubber urethral catheter. This naturally favors the early healing of the wound.

Complications After Operation. — 1. Shock: Although some amount of shock is invariably present, it is indeed rare to encounter severe shock if the patient has been well selected and well prepared. When it does occur I rely on saline infusions, blood transfusions and injections of adrenal cortical extract.

2. Hemorrhage: Although a good many surgeons report alarming hemorrhage in some of their cases, I have rarely, if ever, encountered hemorrhage severe enough to be described as a complication. It may occur at the time of the operation as a primary hemorrhage. This should not happen if the patient is well selected and well prepared and if the enucleation is done through the pathologic capsule without encroaching upon the vascular anatomic capsule. However, if and when it occurs, it is best controlled at first by continuous irrigation with hot saline solution, by packing of the prostatic bed or by compression with Pilcher's bag. Bleeding may also occur at any time after the operation, during the first forty-eight hours, as a reactionary hemorrhage. This is best controlled by raising the foot of the bed, giving blood transfusions and coagulants like hemoplastic serums, vitamin C and calcium injections, failing which packing of the area will be needed. Secondary hemorrhage may also occur at the end of the week as a result of local sepsis and sloughings. This is best treated by continuous irrigation along a urethral catheter and by packing of the wound.

3. Epididimo-Orchitis: I have found this complication the commonest in my practice. I do not as a rule ligate the vas deferens in order to avoid it, as some surgeons do as a routine, prior to the prostate operation. This complication usually occurs about a week after enucleation of the prostate. It rarely if ever proceeds to suppuration. It may be attributed to absorption of sepsis from the inflamed prostatic bed, either along the vas or along the lymphatics. This complication is best treated by support and fomentations of the part, calcium with iodine injections and antibiotics in the early stage, followed by milk injections later on.

4. Pelvic Cellulitis: This is rather a rare complication and is likely to occur only if the true anatomic capsule, which is really the continuation of the pelvic fascia, is badly lacerated, which is not uncommon if persistent attempts are made to remove a hard, fixed and fibrosed prostate gland. It is a bad complication. It is adequately treated by local fomentations and antibiotics.

5. Ascending Urinary Infection: This is not an uncommon complication, and, as it damages renal function, thereby threatening or precipitating uremia, it is one of the causes of postoperative mortality in many cases. It may occur in the form of mild pyelitis or severe pyelonephritis. Mostly it is manifested on about the third day after the operation. It is heralded by high fever, rigors, toxemia and blood-stained urine. It is best treated by large doses of alkalis, sulfa drugs, streptomycin and cylotropin injections, together with copious fluids by mouth.

6. Uremia: Failure of Renal Function: This is the commonest cause of postoperative mortality in my cases and consequently it is the most dreaded complication of all. It is a common complication because the majority of patients come for operation when the disease is much advanced and renal function is markedly damaged by prolonged urinary obstruction. In theory, one would expect that this complication to be encountered but rarely if renal efficiency has been well tested and the patient well selected and well prepared prior to operation; but in actual practice, in spite of all these considerations, renal function begins to dwindle from the third day after operation. The output of urine diminishes, the urine remains blood-

stained and high-colored, the tongue becomes dry and slow, and muttering delirium supervenes, with some stupor, incoherence of speech and tremor. The usual way of treating this complication is to give repeated intravenous dextrose-saline infusions and concentrated 50 per cent magnesium sulfate solution by intravenous injection, to stimulate renal secretion.

7. Pneumonia (Hypostatic): This is also not an infrequent complication. It may occur as a genuine postanesthetic basal pneumonic consolidation within forty-eight hours after the operation, as an acute manifestation, or it may occur gradually as a hypostatic basal congestion of both lungs. The outcome is often grave because of the advanced age of the patient and the nature of the operation, necessitating the prolonged bed rest which favors this complication.

Sequelae: 1. Stricture: A very few patients may develop a kind of fibrous stricture at the internal meatus from contraction of the fibrous scarring at the prostatic bed. This can be treated by regular and frequent dilatations.

2. Incontinuence of Urine: This is rare, as the external sphinctor is practically never injured by this operation.

3. Persistence of Suprapubic Urinary Fistula: This may occur in a few cases if complete enucleation of the prostate has not been achieved. It is best treated by another attempt at complete removal of the remaining portion of the gland and then by catheter drainage of the bladder per urethra, followed by occasional dilatation.

4. Impotence and Sterility: Considering the age at which this operation is usually undertaken, these sequelae are immaterial in the majority of cases. However, they do occur in some few cases and cannot be corrected unless they have an entirely psychic basis.

5. Neurosis and Psychosis: These may develop gradually as a lingering legacy of this operation in some few cases, especially if the patients have already exhibited psychoneurotic tendencies even preoperatively. These sequelae may be corrected by change of environment, sedatives, healthy occupation of the mind, autosuggestion and psychotherapy.

Relative Merits and Demerits of this Operation as compared to Other Methods of Prostatectomy.—As compared to Thompson-Walker's open method of suprapubic prostatectomy, Harris's modifications thereof, Millin's reptropubic prostatectomy and Young's perineal prostatectomy, Freyer's suprapubic operation has certain advantages and disadvantages which may be briefly stated as follows:

Advantages:

1. This is the simplest procedure, requires the least amount of handling or manipulations, and takes very little time.

2. It produces very little shock and bleeding.

3. The rectum and the external sphinctor of the bladder are never injured.

Disadvantages:

1. It does not provide for visual reconstruction of the prostatic bed; hence postoperative fibrosis and strictures are not uncommon.

2. It is not a suitable operation for removal of small, firm and fibrosed prostates.

3. It is not a suitable operation for removal of prostates affected by malignant disease.

Record of Results and Statistical Survey.—During the last ten years I have performed the operation of suprapubic prostatectomy by Freyer's method in about 96 cases. The records and results of these 96 operations are statistically analyzed as follows:

Total number of suprapubic prostatectomies, 96.

Prostate removed in one stage, 6 cases (6.2 per cent); in two stages, 90 cases (93.8 per cent).

Age of patient: Maximum, 83; minimum, 45; average, 65.

Blood urea level (normal 25 to 35 mg.): maximum, 75 mg.; minimum, 25 mg.; average, 35 mg.

Systolic blood pressure in millimeters of mercury: maximum, 160; systotic minimum, 100; average, 115.

Weight of removed prostate (normal, ¼ ounce): maximum, 3 ounces; minimum, ¼ ounce; average, 1½ ounces.

Coexisting vesical calculi: 3 cases, or 3.2 per cent.

Complications after Operation: postoperative shock, 6 cases, or 6.2 per cent; hemorrhage, 2 cases, or 2.1 per cent; epididimo-orchitis, 16 cases, or 17 per cent; pelvic cellulitis, 1 case, or 1.1 per cent; postoperative pneumonia, 4 cases, or 4.1 per cent; pyelitis and pyelonephritis, 6 cases, or 6.2 per cent, and renal failure and uremia, 7 cases, 7.3 per cent.

Results of 96 suprapubic prostatectomies: Cures, 88, or 91.7 per cent; deaths, 8, or 8.3 per cent.

Average stay in hospital after one-stage operation, 3 weeks; after two stage operation, 6 weeks.

Causes of mortality: urenia, 4; urinary sepsis, 1; postoperative pneumonia, 1; shock, 2; total number of deaths, 8.

Comparative Statistics.—Although reports of results of these operations performed in various parts of India are not available to me, if I compare my results with those of general surgeons of the United Kingdom, where the mortality rate, as published, varies from 4 to 10 per cent (10 per cent being in the first 100 cases), I may submit in this connection, that the 8.3 per cent mortality rate for my limited experience of 96 cases compares favorably with those recorded in the United Kingdom. It may also be borne in mind that my patients usually seek operation hopelessly late, when the disease is far advanced and when their renal condition and general health have deteriorated considerably; many of them, too, are primarily ill nourished and poor operative risks.

SUMÁRIO

O autor apresenta uma completa discussão da prostatectomia supra-púbica, incluindo indiçaões, técnica operatoria, cuidados posoperatorios e resultados finais. Suas observações são realçadas e ilustradas por estatisticas comparativas.

ZUSAMMENFASSUNG

Der Verfasser begibt sich in eine sorgfaeltige Eroerterung der suprapubischen Prostataresektion, einschliesslich ihrer Indikationen, der Operationstechnik, der Nachbehandlung und der Endergebnisse. Seine Beobachtungen werden durch vergleichende Statistiken bestaetigt.

RESUMEN

Se presenta una discusión completa de la prostatectomía suprapúbica, incluyendo indicaciones, técnica operatoria, cuidados postoperatorios y resultados finales. Se señalan e ilustran las observaciones del autor con estadísticas comparativas.

RIASSUNTO

L'Autore presenta un'ampia discussione sulla prostatectomia soprapubica includendo indicazioni, tecnica operatoria, trattamento postoperatorio e risultati a distanza. Le sue osservazioni sono illustrate da statistiche comparative.

RÉSUMÉ

L'auteur présente une étude complète sur la prostatectomie suspubienne; ses indications, sa technique opératoire, des soins post-opératoires et enfin des résultats; une statistique avec des cas à l'appui.

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Intestinal Obstruction Due to Gallstones

Report of Two Cases

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INTESTINAL obstruction due to an impacted gallstone in the intestinal tract is so rare and so infrequently diagnosed before operation or autopsy that it is of sufficient interest to warrant the report of additional authentic cases.

Historical Data.—That gallstones can cause intestinal obstruction has been known for a great many years. The first case was reported by Bartholine in 1654, but it was not until 1890 that the first article on the subject was published by Courvoisier. At that time he was able to find only 131 authentic cases in the literature. In 1914, Van Wagner reviewed the literature and found 334 cases. One of the latest and most complete articles was written by Foss and Summers in 1942. They reported 10 cases of their own and analyzed 140 others. Review of the present literature reveals that about 15 cases have been reported since, making about 500 cases altogether.

Incidence. — Gallstones are recognized as one of the rarest causes of intestinal obstruction. Obstruction due to gallstones is estimated to occur in about 0.5 to 2 per cent of the cases of intestinal obstruction. Vick, in the *British Medical Journal,* analyzed 3,625 cases of intestinal obstruction occurring in London hospitals between 1925 and 1930, noting gallstones as the cause of obstruction in 47 cases, or 1.3 per cent. Meyer and Spivak, in 1934, reviewed 505 cases of intestinal obstruction at the Cook County Hospital and found 2 cases of obstruction due to gallstones, for an incidence of 0.4 per cent. Martin sent questionnaires to a number of prominent American surgeons and elicited replies indicating that of approximately half a million operations performed by them, there were only 16 instances of intestinal obstruction due to gallstones, or an average of 1 in about 30,000 operative cases. Many surgeons with extensive experience encounter no more than two or three cases in a lifetime.

Size of Stone.—The size of the gallstones found is interesting and almost unbelievable. The largest gallstone reported in the literature was described by Turner in the *British Medical Journal* in 1932. This gallstone, 3 by 2¼ by 7 inches (7.6 by 5.6 by 17.7 cm.), still reposes in the Museum of the Royal College of Surgeons. Rankin and McKeith reported one 6 by 8.5 cm.; Clement observed one measuring 2½ by 1¼ inches (6.3 by 3.1 cm.), and Burnett removed one at operation with the greatest circumference, 5½ inches (14 cm.).

Some large gallstones have been known to pass spontaneously after severe symptoms of ileus. Coldrey reported one 2 by 1 inches (5 by 2.5 cm.) in diameter which passed after severe obstructive symptoms of one weeks' duration, with recovery. It is recognized that in about half of the cases the patients recover without operative intervention. Murphy stated that 70 of 125 patients, after repeated attacks of colic, emesis, ileus, etc., were cured spontaneously by the passage of the stone by rectum. Expectant treatment, however, is not to be prolonged after definite obstructive symptoms occur. Early operation offers the only hope of lowering the high mortality rate associated with obstruction.

Submitted for publication May 1, 1951.

Mechanical and Pathologic Picture.—Three possible ways of entry of gallstones into the intestinal tract have been demonstrated. 1. Fistula between the gallbladder and the intestinal tract as a result of chronic cholecystitis, cholelithiasis followed by infection, gangrene and perforation with the development of adhesions between the gallbladder and the adjoining viscera. Although the most frequent site of perforation within these adhesions is the duodenum, it may ulcerate into the stomach, the jejunum, the ileum, or the colon; cases of perforation even into the bladder have been recorded, the stone passing out through the urethra. 2. A fistula from the common duct into the duodenum. 3. Passage through the intact common duct and into the duodenum.

Usually the gallstone gets into the intestinal tract through a cholecystoduodenal fistula. There are cases on record of intestinal obstruction by a large gallstone, however, in which no fistula existed, and the only explanation is that the stone must have passed by way of the biliary ducts. Murphy cited an instance in which the common duct was dilated sufficiently to allow the passage of a stone 4 inches (10 cm.) in circumference. Morgagni, cited by Martin, reported a case in which the common duct was dilated to the size of the stomach and filled with stones. Divergent opinions as to the possibility that large calculi can pass through the common duct are spread widely through the literature on the subject.

Etiologic Background.—*Sex:* The incidence of gallstones in women and men respectively is in about the proportion of 3 to 1, whereas intestinal obstruction due to gallstones is much more frequent in women than in men. Balch reported a series of 17 cases of this type of obstruction, 16 of the patients being women. Foss and Summers reported the ratio at about 6 to 1. The patients in both cases here reported were women.

Age: This type of obstruction is found in patients of the older age group, usually between 60 and 80. One of our patients was 80 and the other 78 years of age.

Mortality.—Intestinal obstruction due to gallstones is associated with a high mortality rate. This is due to the "poor risk" status of the advanced age group in which the lesion usually occurs. The mortality rate in different reports varies from 50 to 80 per cent. Balch reported 17 cases, with a mortality of 65 per cent; Foss and Summers, 10 cases, with a mortality of 50 per cent; Moore, with 4 cases, reported a mortality of 75 per cent, and Abbott and Hunt reported 4 cases with a 50 per cent mortality. Balch brought out the importance of early operation as a factor in lowering the mortality rate. In his series of 17 cases, 8 patients were operated on after three days of obstruction and only 1 survived, whereas, in 9 cases in which operation was performed within the first three days, only 4 patients died.

Site of Obstruction.—The lumen of the small bowel gradually diminishes in size as it approaches the ileocecal valve, so that the most frequent site of obstruction is in the terminal portion of the ileum. Foss and Summers, in reviewing 125 cases, observed this site in 70 per cent of the cases. The passage of a stone through the large intestine rarely causes obstruction unless it is arrested at the anal orifice. Cahill reported a case of gallstone causing obstruction at the sigmoid flexure. In a careful review of the literature he was able to find only 2 other cases of obstruction at the sigmoid flexure. One of us (Calihan), has had 1 case of obstruction at the sigmoid flexure, in which a large gallstone was successfully removed. It is recognized that a large gallstone may be temporarily arrested at the anal orifice. Occasionally, to avoid direct enterotomy for obstructing stone, surgeons have "milked" a large gallstone through the ileocecal valve, allowing it to pass spontaneously through the colon. This procedure would seem justified only in the presence of mitigating circumstances.

Symptoms.—Obstruction due to gall-

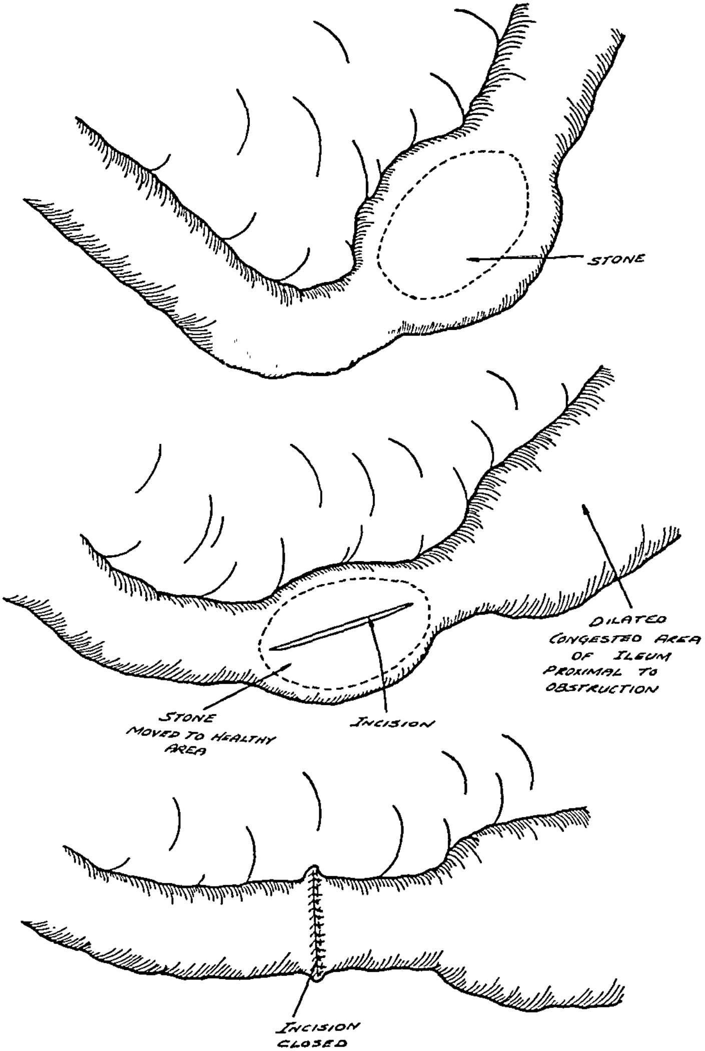
STONE
DILATED CONGESTED AREA OF ILEUM PROXIMAL TO OBSTRUCTION
STONE MOVED TO HEALTHY AREA
INCISION
INCISION CLOSED

Fig. 1.—Diagram of operative technic.

stones produces a clinical picture similar to that of obstruction from other causes, namely, pain, vomiting and obstipation. A large stone usually becomes wedged in the lumen of the bowel and causes intermittent partial or complete obstruction. The stone, owing to its shape, may act as a ball valve and, in certain positions, completely occlude the lumen of the bowel; in others, only partially, so that the symptoms of obstruction are often intermittent. The symptoms of intestinal obstruction may terminate suddenly, only to recur several times before operation. As a certain amount of gas may get by, distention may not be marked and the patient may continue to pass small amounts of gas by rectum. As spasm relaxes or the stone changes position, it gradually passes farther down the intestinal tract. The lumen of the small intestine gradually diminishes in size as it approaches the cecum, so that the obstruction of a large stone will eventually become complete, while a smaller stone may pass without difficulty through the ileocecal valve into the colon and be expelled spontaneously. Hennessy stated that if the calculus is less than 2 or 3 cm. in diameter, the chances are that it will pass spontaneously.

The time required for a stone to traverse the intestinal tract varies greatly. Angle reported 2 cases; in the first case the time was one year, and in the second, four months. Jones stated that in 1 case he had observed the stone passed through the intestine in thirty hours; in another, it required twenty-eight days. Von Wortman cited the case of a woman aged 65 whose history showed that the stone had been in the intestine about a year. Jaundice is not usually a symptom except in those cases in which the stone passes into the intestine through the cystic and common ducts, and in these cases pain is very severe.

Diagnosis.—A definite diagnosis of obstruction due to gallstones is seldom made before operation, but a diagnosis of intestinal obstruction can be made from the symptoms. If the patient has had a previous history of gallbladder disease, particularly if there is a past history of an episode suggestive of acute cholecystitis, it should lead one to suspect a gallstone as the possible etiologic factor. A roentgenogram of the abdomen is often of value. A scout film may show: (1) a shadow suggestive of gallstone; (2) intestinal obstruction indicated by distended loops of bowel, or (3) gas in the gallbladder or hepatic system; because, whenever gallstones have perforated through the gallbladder into the intestinal tract, there is usually an opening sufficiently large to permit the reflux of intestinal contents. Such a fistula seldom persists for any length of time. The spontaneous closing of these fistulas may be the basis for the opinion of authors who claim that many of these large stones are propelled through the common duct.

Treatment.—In any case of acute intestinal obstruction, the treatment of choice is early diagnosis and operation. Intravenous saline solution should be given to replace the chlorides lost by vomiting. Wangensteen suction or a Miller-Abbott tube should be used both preoperatively and postoperatively for decompression. Owens reported a case in which he treated a gallstone ileus by decompression with a Miller-Abbott tube alone and obtained a successful result. Decompression of the bowel released the tension which was forcing the large stone against an already edematous ileocecal valve. This was sufficient to allow for the subsidence of the edema and to permit the stone to pass by the obstruction.

Operative intervention is usually necessary, however, in these cases. A paramedian incision will give good exposure. Spinal anesthesia is usually preferred. The obstructing stone is found by systematic palpation of the entire small intestine. When the abdomen is opened, if all of the presenting coils are greatly distended, the hand should be passed into the pelvis to grasp the collapsed ileum as near the ileocecal valve as possible. This should be rapidly run through the fingers in an upward direction, the assistant returning the coils into the peritoneum as rapidly as they are passed. When the dilated, obstructed point is reached, great care should be exercised not to tear the intestine where its walls are weakened by necrosis or ulceration from pressure by the calculus. The loop of intestine containing the calculus is withdrawn from the abdomen, and packs are carefully placed around it to isolate it from the abdominal cavity. After intestinal clamps have been applied above and below the segment containing the stone, a longitudinal incision is made along the antimesenteric portion of the intestinal wall over the stone. If possible, the incision should be made in uninvolved bowel just beyond the point of obstruction, and the stone removed through an opening made in the normal bowel. By making the incision in normal bowel, the risk of attempting to suture edematous, dilated and thinned-out intestinal wall is avoided. The incision is closed transversely by a double Lambert suture, so as not to constrict the lumen of the bowel. Gloves and instruments should be changed before the bowel is returned to the abdominal cavity and the wound closed. An ileostomy above the site of obstruction may or may not be done. With recent satisfactory methods of treating ileus by decompression with Wangensteen suction, many surgeons feel that ileostomy is not necessary and that their mortality figures have been lowered by omitting its use. Storck, Rothchild and Ochsner have made a statement to this effect, and Balch concluded, that ileostomy is usually not necessary and may be harmful. The consensus is that best results are obtained by minimumal surgical maneuvers. The severe toxemia present, and the fact that the condition occurs in the aged, make this type of case a serious surgical problem. Of these cases, Murphy once said, "The patient frequently dies, cured of her obstruction."

A word of warning should be inserted here—if a faceted stone is found a search should be made for other stones. Numerous cases are reported in which one stone was removed, only to be followed by recurrence of symptoms in a few days, another stone having caused another obstruction. Pybus, cited by Rankin, reported a case of obstruction in which a faceted stone was removed and in fourteen days, symptoms of obstruction were again noted which were attributed to leakage of the suture line. Autopsy revealed, however, two stones impacted in the ileum a few feet apart, with perforation of the intestine at each point.

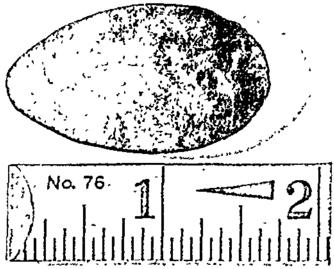

Fig. 2.—Photograph of gallstone removed in Case 1. Scale indicates size of stone.

Unless there has been gross contamination of the peritoneal cavity at the time, drainage is not usually necessary in these cases.

CASE 1.—A woman aged 80 yas admitted to the hospital on May 2, 1945, with a forty-eight hour history of nausea and vomiting associated with pain in the upper middle part of the abdomen and obstipation. She had had an attack somewhat similar, but milder, in November 1944 (six months previously). During the interval there had been some mild epigastric distress.

The patient was obese and appeared acutely ill. The abdomen was full, but there was little distention; it was soft to palpation, with tenderness on deep pressure around the umbilicus and on the lower right side. No masses were palpable.

Laparotomy disclosed that the obstruction, stones produces a clinical picture similar to that of obstruction from other causes, namely, pain, vomiting and obstipation. A large stone usually becomes wedged in the lumen of the bowel and causes intermittent partial or complete obstruction. The stone, owing to its shape, may act as a ball valve and, in certain positions, completely occlude the lumen of the bowel; in others, only partially, so that the symptoms of obstruction are often intermittent. The symptoms of intestinal obstruction may terminate suddenly, only to recur several times before operation. As a certain amount of gas may get by, distention may not be marked and the patient may continue to pass small amounts of gas by rectum. As spasm relaxes or the stone changes position, it gradually passes farther down the intestinal tract. The lumen of the small intestine gradually diminishes in size as it approaches the cecum, so that the obstruction of a large stone will eventually become complete, while a smaller stone may pass without difficulty through the ileocecal valve into the colon and be expelled spontaneously. Hennessy stated that if the calculus is less than 2 or 3 cm. in diameter, the chances are that it will pass spontaneously.

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operation.

7. Diagnosis is often aided by roentgenologic examination.

8. The mortality rate is very high, variously estimated at from 50 to 90 per cent. This may be lowered by earlier diagnosis and operation and by a minimum amount of surgical treatment.

RÉSUMÉ

1. On rapporte deux cas de lithiase biliaire causant une obstruction intestinale.

2. C'est une des rares causes de l'obstruction intestinale représentant de 0.5 à 2% des cas.

3. Les calculs entrent habituellement dans le tractus gastro-intestinal au moyen d'une fistule entre la vésicule et, le duodénum.

4. La lithiase est beaucoup plùs fréquente chez les femmes que chez les hommes et se présente habituellement entre 60 et 80 ans.

5. L'obstruction se produit habituellement au niveau du 1/3 inférieur ou à la portion terminale de l'iléon.

6. L'obstruction causée par la lithiase vésiculaire diffère des autres types d'obstruction en ce qu'elle est fréquemment intermittente., à différentes périodes. Les symptômes d'obstruction peuvent disparaitre et réapparaitre plusieurs fois avant l'opération.

7. Les R.X. aident très souvent au diagnostic.

8. Le taux de malignité est très élevé, il est estimé à 50 à 90%. Ce taux peut être abaissé par un diagnostic et une opération plus précoce et par le moins de manipulations chirurgicales possibles.

RESUMEN

1. Se comunican dos casos de colelito produciendo obstrucción intestinal.

2. Los coleitos son la más rara de las causas de obstrucción intestinal, con ocurrencia del 0.5 al 2% de los casos de obstrucción intestinal.

3. Los colelitos penetran ordinariamente al conducto intestinal por una fístula colecistoduodenal.

4. Son más frecuentes en las mujeres que en los hombres y ocurren odinariamente de los 60 a los 80 años de edad.

5. El sitio de obstrucción se encuentra generalmente en el tercio inferior o porción terminal del íleon.

6. La obstrucción por colelitos difiere de los otros tipos de obstrucción en que es frecuentemente intermitente por un período variable. Los síntomas de obstrucción pueden desaparecer sólo para reaparecer varias veces antes de la operación.

7. El diagnóstico es a veces facilitado *röntgenológicamente.*

8. El índice de mortalidad es muy alto, del 50 al 90%. Puede descender por diagnóstico y operación tempranos y un procedimiento quirúrgico mínimo.

RIASSUNTO

1. Due casi di occlusione intestinale da calcoli biliari sono riportati.

2. Calcoli biliari sono fra le piu' rare cause di occlusione intestinale, ed incidono fra lo 0,5 al 2 per cento dei casi di occlusione.

3. I calcoti biliari generalmente penetrano nell'intestino attraverso una fistola colecisto-duodenale.

4. I calcoli sono molto piu' frequenti nella donna che nell'uomo, e di solito fra i 60 e gli 80 anni.

5. La sede dell'occlusione é generalmente il terzo distale o la porzione terminale dell'ileo.

6. La occlusioni da calcoli biliari differiscono da ultri tipi di occlusione nel fatto che esse sono spesso intermittenti per un periodo variabile. I sintomi occlusivi possono cessare per ripresentarsi piu' volte prima dello intervento.

7. La diagnosi é spesso agevolata dagli esami radiologici.

8. La mortalita' operatoria é molto alta, dal 50 al 90 per cento. Questo tasso puo' essere abbassato dalla diognosi precoce e tempestivo intervento che deve essere ridotto al minimo indispensabile.

ZUSAMMENFASSUNG

Es wird ueber zwei Faelle von durch Gallensteine hervorgerufenem Darmverschluss berichtet.

Gallensteine gehoeren zu den seltensten Ursachen des Darmverschlusses und kommen nur in 0,5 bis 2% aller Faelle von Darmverschluss vor.

Gewoehnlich gelangen die Gallensteine in den Darmkanal auf dem Wege ueber eine Fistel zwischen Gallenblase und Zwoelffingerdarm.

Sie treten weit haeufiger bei Frauen als bei Maennern auf, gewoehnlich im Alter zwischen 60 und 80 Jahren.

Im allgemeinen tritt der Verschluss im kaudalen Drittel oder in der Endschlinge des Ileum auf.

Der durch Gallensteine hervorgerufene Darmverschluss unterscheidet sich von anderen Formen insofern als er haeufig Unterbrechungen von verschiedener Dauer aufweist. Die Verschlusserscheinungen koennen verschwinden und, bevor es zur Operation kommt, sich mehrfach wiederholen.

Die Diagnose wird haeufig durch die Roentgenuntersuchung gestuetzt.

Die Sterblichkeitsziffer ist sehr hoch und wird auf 50 bis 90% geschaetzt. Diese Zahl kann erniedrigt werden, wenn Diagnose und Operation fruehzeitig erfolgen und der chirurgische Eingriff auf ein Minimum beschraenkt wird.

SUMÁRIO

1. Dois casos de calculo biliar causadôres de obstrução intestinal são relatados.
2. Calculos biliares são uma das mais raras causas de obstrução intestinal, sendo responsaveis por esta em apenas 0, 5 a 2% dos casos.
3. Os calculos biliares usualmente entram no tubo gastrointestinal por meio de uma fistula entre a vesicula biliar e o duodeno.
4. Os calculos ocórrem muito mais frequentemente nas mulhéres do que nos homens, e usualmente entre as idades de 60 e 80 anos.
5. O sitio da obstrução é usualmente o têrço inferior ou a porção terminal do ileum.
6. A obstrucao devida a calculos biliares difére dos outros tipos de obstrução em que ela é intermitente por um periodo variavel. Os sintomas de obstrução podem acalmar, irrompendo, porém, varias vezes antes da operação.
7. O diagnostico é muitas vezes facilitado pelo exaame radiológico.
8. A taxa de mortalidade é muito alta, estimada em numeros de 50 a 90 por cento. Essa taxa pode ser reduzida por um diagnóstico e operacão precoces e por um processo cirurgico minimo.

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Surgical Lesions of Adult Type in Young Persons

WYATT C. SIMPSON, M.D., M.S. IN SURGERY, F.A.C.S., F.I.C.S.
FLORENCE, ALABAMA

DURING their introduction to clinical medicine, physicians and surgeons are given certain pegs on which to hang their new-found facts. Continued reliance on these pegs may prove fallacious. An example is the relegation of certain disease processes to specific age groups.

My attention was first drawn to the existence of surgical lesions usually associated with adult patients, but occurring in children, by the following case:

H. S., a girl aged 4 years, entered the hospital for emergency treatment in September 1940, with upper abdominal pain, vomiting, and fever. Examination revealed her to be obviously ill and in acute pain but with no respiratory distress. Examination of the throat and chest revealed no abnormality. Tenderness and rigidity were present in the right upper quadrant of the abdomen. The temperature was 102.4 F. and the leukocyte count 20,400 per cubic millimeter of blood. The urine was normal, as was a roentgenogram of the chest. We explored the abdomen with the preoperative diagnosis of appendicitis associated with an incompletely rotated colon. At operation the appendix was in its normal position and not inflamed. The gallbladder was tensely distended and acutely inflamed. It was removed, and recovery was uneventful. There were no gallstones, and the enlarged lymph node at the junction of the cystic and the common duct was interpreted as secondary to the cholecystitis rather than as an obstructive and causative factor, as suggested in a similar case reported by Potter.[1]

Review of the literature indicates that acute cholecystitis, although uncommon, has been encountered often in children; and it has been suggested that conservative measures are usually adequate. It seems to me that the same mechanical factors are operative in this condition in children as in adults, and that the proper treatment for both is cholecystectomy.

Beals[2] has reported roentgenographic demonstration of gallstones in a 3-year-old child who had had episodes of abdominal colic since birth. Others have reported the observation of gallstones at autopsy in stillborn babies. This, obviously, raises the question of choledocholithiasis in jaundice of the newborn, although I have read no report of such an occurrence.

My next encounter with a child usurping the pathologic prerogatives of his elders came several years later.

W. G., a boy aged 11, entered the hospital in June 1950, complaining of the sudden onset of generalized abdominal pain while diving into a swimming pool. Nausea was present, but no vomiting. He had a prior history of indigestion and "gas pains" of several years' duration, which had been attributed to intestinal parasites (without laboratory study). He was in obvious pain. There were generalized tenderness and rigidity of the abdomen, maximal in the right lower quadrant. The temperature was 99.6 F. and the leukocyte count 11,600 per cubic millimeter of blood. He had been referred to the hospital for treatment of acute appendicitis.

Having had a recent experience with a 14-year-old boy whose perforated duodenal ulcer I had had to visualize through a McBurney incision, I explored this child's abdomen through a right rectus incision and closed a perforated duodenal ulcer.

He has subsequently had recurrent digestive distress, which places him in that group of patients with virulent ulcer who will probably require definitive surgical intervention.

Here again is a situation which is not unique, but which is uncommon enough to come as a surprise in the average physician's practice. Brown[3] has reported a case of perforated duodenal ulcer in a girl aged 5 years. Others have been reported as occurring in the first few days of life, although they are suspect as being due to intracranial birth lesions.

Proctor[4] reported only 1 case of child-

From the Florence Clinic, Florence, Alabama.
Submitted for publication April 21, 1951.

hood gastric ulcer out of 1,595 cases in twenty years at the Mayo Clinic.

The next patient in this general category who particularly interested me was C. S., aged 18, a boy who came to the hospital in September 1950 with the complaint of generalized cramping abdominal pain of three days' duration. The pain tended to localize in the right lower quadrant of the abdomen. There had been nausea, but no vomiting. There had been no alteration of bowel habit. The temperature was 99.3 F. and the leukocyte count 9,800 per cubic millimeter of blood, with 78 per cent polymorphonuclear leukocytes. Urinalysis gave negative results. The patient had had a similar attack about three months previously, which subsided spontaneously on medical treatment. Examination revealed no abnormality except moderate localized tenderness and slight muscular rigidity in the right lower quadrant of the abdomen.

Operation was performed with the preoperative diagnosis of subacute recurrent appendicitis. On exploration (which fortunately was carried out through a right rectus rather than a McBurney incision), the appendix was observed to be normal. However, an annular indurated area was discovered at the junction of the sigmoid and descending portions of the colon. The abdomen was closed, and the usual preparation for colon resection was carried out. This included, primarily, the administration of sulfathaladine and aureomycin by mouth, after preliminary purgation with phospho soda. One week later, through a left abdominal transverse incision, about 14 inches (35 cm.) of colon, including the lesion and its mesentery, was removed, and an open type end-to-end anastomosis was carried out. The patient made an uneventful recovery. This was a colloid type of carcinoma, as is the case in nine out of ten juvenile lesions; but no lymph node involvement was demonstrated by the pathologist, so it is to be hoped that the patient has a 50 per cent chance of survival.

Bacon,[5] in 1,995 cases of colonic cancer, has estimated an incidence of 5.4 per cent in patients under the age of 30. There are 94 proved cases of carcinoma of the rectum in patients under the age of 20 in the literature. Johnson[6] has reported a carcinoma of the colon in a 13-year-old Negress. Clear[7] has reported one in a 3-year-old child. The longest survival period among these juvenile patients has been four years. This poor prognosis is attributed not only to the greater rapidity of growth of neoplasms in the young (colloid carcinoma of the intestine, in contradistinction to that of the breast, carries a worse prognosis than other types and is always graded IV), but also, and importantly, to the fact that the diagnosis is not made until late in the course of the disease.

SUMMARY

The purpose of this paper is to call attention to the fact that children are heir to all the ills to which the flesh of man is heir; that, although diseases of the degenerative type are less commonly encountered in children, they are just as fatal if neglected; they are suspect by the same symptoms, diagnosable by the same examinations and correctable by the same surgical procedures.

ZUSAMMENFASSUNG

Der Verfasser weist auf die Tatsache hin, dass Kinder von allen Erkrankungen, denen Menschen im allgemeinen ausgesetzt sind, befallen werden koennen. Wenn auch die Krankheiten des degenerativen Alters bei Kindern weniger haeufig vorkommen, so koennen sie doch, wenn vernachlaessigt, genau so verhaengnisvoll ausgehen; die Symptome sind die gleichen wie beim Erwachsenen, die Diagnose wird mit den gleichen Methoden gestellt, und die gleichen chirurgischen Verfahren werden zu ihrer Behandlung angewandt.

RESUMÉ

L'objet de cet article est d'attirer l'attention sur le fait suivant; les enfants héritent des maladies des parents. Même si les maladies des adultes—voire même de l'âge avancé—sont plus rares chez les enfants, elles existent et avec le même résultat funeste si on les ignore. Les mêmes symptômes, les mêmes moyens de poser le diagnostic et le même traitement pour tous.

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Der Verfasser weist auf die Tatsache hin, dass Kinder von allen Erkrankungen, denen Menschen im allgemeinen ausgesetzt sind, befallen werden koennen. Wenn auch die Krankheiten des degenerativen Alters bei Kindern weniger haeufig vorkommen, so koennen sie doch, wenn vernachlaessigt, genau so verhaengnisvoll ausgehen; die Symptome sind die gleichen wie beim Erwachsenen, die Diagnose wird mit den gleichen Methoden gestellt, und die gleichen chirurgischen Verfahren werden zu ihrer Behandlung angewandt.

RÉSUMÉ

L'objet de cet article est d'attirer l'attention sur le fait suivant; les enfants héritent des maladies des parents. Même si les maladies des adultes—voire même de l'âge avancé—sont plus rares chez les enfants, elles existent et avec le même résultat funeste si on les ignore. Les mêmes symptômes, les mêmes moyens de poser le diagnostic et le même traitement pour tous.

RIASSUNTO

Lo scopo di questo articolo e' quello di richiamare l'attenzione sul fatto che i bambini sono eredi di tutte le malattie delle quali il corpo umano e' erede. Per quanto queste malattie degenerative non siano comunemente incontrate nei bambini, esse sono non di meno fatali se neglette. Esse vengono sospettate per gli stessi sintomi e diagnosticate con gli stessi esami e corrette con gli stessi procedimenti chirurgici.

RESUMEN

El objeto de este artículo es llamar la atención sobre el que los niños heredan todos los padecimientos que hereda el hombre, pues aun cuando las enfermedades de la etapa degenerativa de la vida se encuentran menos comúnmente en ellos, resulta fatal no tenerlas en cuenta, debiendo sospecharlas por la misma sintomatología, diagnosticarlas por los mismos exámenes y corregirlas por los mismos procedimientos quirúrgicos.

SUMÁRIO

O intuito deste trabalho é chamar a atenção para o fáto de que as crianças podem herdar todas as doenças; que, embóra essas doenças da idade degenerativa sejam menos comumente encontradas em crianças, são igualmente fatais si descuradas. Elas são reveladas pelos mesmos sintomas, diagnosticaveis pelos mesmos exames e corrigidas pelos mesmos processos cirurgicos.

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To Our Contributors Abroad

We regret to announce that under current publishing conditions it has become impossible for the *Journal* to arrange the translation into English of original articles submitted in other languages. With the single exception of articles written specifically for the *Seccion en Espanol,* which, of course, do not require translation, we must therefore request that all articles henceforward be submitted in the English language. Prompt publication can be greatly facilitated if all manuscripts are types in double or triple space to allow room for editorial corrections. Your cooperation will be deeply appreciated.

Acute Pancreatitis

Observations on Two Hundred and Fifty Cases

LAURENCE S. FALLIS, M.D., F.A.C.S.
DETROIT

THE relatively large number of recorded cases of acute pancreatitis available for study during the past decade provides ample evidence of the current interest in this acute abdominal emergency. Our own hospital records confirm the truth of this statement. Prior to 1935 we had indexed only 1 case of acute pancreatitis for each 10,000 hospital registrations, and in all of these the diagnosis was made either at operation or at autopsy. Stimulated by the work of Elman and Somagyi, we increased the incidence of recognition of the disease to 1 in 4,000 by 1940, and at present we diagnose 1 case of acute pancreatitis for each 720 hospital registrations. This improvement has been accomplished by alerting the emergency room residents and interns to such an extent that consideration of this disease enters the diagnostic field in all emergency cases of disease of the upper part of the abdomen. Following the teaching of the St. Louis group, we attempt to emphasize that it is just as important to obtain a blood amylase reading as it is to obtain a leukocyte count and a differential count. Another point of help in diagnosis is abandonment of the classic concept of the disease, in which shock and cyanosis predominate, and recognition of the fact that there are many cases, even of extensive involvement of the gland, in which only mild clinical manifestations are presented.

Age.—Acute pancreatitis is primarily a disease of middle age, though it may occur at any period of life. Our own patients illustrate this point; more than half of them were between 40 and 60, and a third were between 40 and 50 (the gallbladder age), but the disease was observed in 2 patients under 20 and in 13 over 60 years of age.

Sex.—The sexes are about equally represented, with perhaps a slight preponderance of the female (53.6 per cent), while cholecystitis is three times as common in women as in men. Thus, it may be said that men with disease of the gallbladder run a much greater risk of acute pancreatitis than do women.

Weight.—We were rather surprised to find that one-third of our patients weighed less than 160 pounds (72.6 Kg.). The association of obesity and pancreatitis has long been recognized, largely because, in the majority of cases, acute pancreatitis occurs in patients with concurrent biliary tract infections (75 per cent of our series) and patients with disease of the gallbladder are usually overweight.

CLINICAL FEATURES

Onset of the Attack.—Prodromal symptoms are rare, though many of our own patients had had similar acute episodes previously and only 10 per cent denied the occurrence of previous symptoms referable to the gastrointestinal tract. The attacks usually came on suddenly in a patient previously in good health. A number of cases are on record in which the condition manifested itself at the conclusion of a full meal or followed a period of alcoholic excesses. It is worthy of note that it is the combination of food and alcohol and not alcohol alone that appears to provoke the attack; the classic example, of course, is the city father stricken at the banquet.

Pain.—Severe and persistent abdomi-

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nal pain is usually present at the onset of the attack. Moynihan described it as the most severe pain associated with any abdominal catastrophe. Morphine is always required for its alleviation, and often doses of ½ grain given hypodermically may be necessary to bring relief. The site of the pain is usually the midepigastrium, and it often bores through to the back. *Of definite diagnostic value is the observation that patients find relief by sitting up in bed and leaning forward.*

Shock.—Severe degrees of shock are rare except in fulminating cases, though mild degrees of shock, as indicated by pallor and sweating, frequently occur early in the disease, when the pain is at the height of its intensity. The absence of shock was an outstanding feature of our own cases.

Nausea and Vomiting.—These symptoms almost always usher in the attack and persist during the acute phase.

Pulse.—A normal pulse reading is usual at the onset. In about half of our patients the pulse did not rise above 100. A rapid, thready pulse indicates the profound toxemia that occurs in fulminating cases.

Blood Pressure.—Blood pressure readings vary with the amount of shock present. The systolic pressure was below 100 mm. of mercury in 5.6 per cent of the 250 patients studied, and under 120 in only 24 per cent.

Temperature. — Moderate elevation is the rule, though subnormal readings may be obtained at the onset. When the condition is severe, high readings are recorded. Only one third of our patients had recorded temperature of over 100 F. After the attack subsides, a return of fever with spiking temperature indicates abscess formation.

Cyanosis.—Halsted and Moynihan made a great point of cyanosis in the diagnosis of acute pancreatitis, but it is rarely seen except when the condition is extremely severe.

Abdominal Distention.—A moderate degree of generalized abdominal distention is a constant observation, but it may be confined to the upper part of the abdomen. It is due to a combination of swallowed air in the stomach and ileus of the transverse colon with its accompanying gaseous distention.

Jaundice.—About 25 per cent of patients show an icteric tint, indicating the relation between pancreatitis and disease of the biliary tract.

Localized Areas of Skin Discoloration.—Discoloration of the skin in the flank (Grey-Turner's sign) or around the umbilicus (Cullen's sign) was observed in 5 patients (2 per cent) with acute pancreatitis. The discoloration, bluish at first, finally fading through green and yellow before disappearing, is due to the retroperitoneal spread of the blood-stained products of pancreatitic disruption. This is one of the few definitely diagnostic clinical signs of acute pancreatitis, but it appears late in the disease and thus has little differential diagnostic value.

Abdominal Palpation.—The absence of pronounced muscle spasm is noteworthy. It was mild or moderate in 60 per cent of our patients. The muscles of the upper part of the rectus are barely on guard, and tenderness is usually elicited only on deep pressure. The maximum point of tenderness is usually in the midline, though it will vary with the pancreatic area involved. When the body and tail of the pancreas are attacked, tenderness will be to the left of the midline; when the head of the pancreas is bearing the brunt of the disease, to the right. Occasionally, when the disease is subsiding, the swollen gland can be outlined through the abdominal wall in a thin patient. Abscesses and pseudocysts developing from the products of pancreatic disruption are usually easily palpable.

LABORATORY INVESTIGATIONS

Blood Diastase. — The most valuable laboratory procedure is an estimation of the blood diastase, since elevated readings confirm the diagnosis of acute pancreatitis in clinically suspected cases. Amylase or diastase is the starch-splitting ferment of the pancreas. It has been repeatedly proved by animal experimentation that the blood diastase level is increased when the pancreatic duct is ligated and decreased when the pancreas is removed. In the early stages of acute pancreatitis both the blood and the urinary diastase are increased, but it is important to make the estimations early, since the levels may return to normal after seventy-two hours. But patients seen early in the attack may have normal readings. Therefore, in suspected cases, repeated estimations should be done if the first reading is within normal limits. It is essential to bear in mind that normal readings may be obtained in the presence of complete disruption of the gland and also in any case first observed at a late stage of the disease.

Leukocyte Count.—The polymorphonuclear response is usually prompt and definite. Over half of our patients had a leukocyte count of over 13,000 per cubic millimeter of blood, and the average polymorphonuclear count was 88.6 per cent.

Urinalysis.—Evidence of dextrose is not infrequently obtained. The almost constant observation of albuminuria emphasizes the toxicity accompanying acute pancreatitis.

Blood Sugar.—Elevated blood sugar levels were observed in 44.6 per cent of the 130 patients upon whom the test was run. In our earlier cases little attention was paid to this means of investigation, but it is now a routine procedure. In many instances the disturbance is simply that of decreased dextrose tolerance. In some patients transitory diabetes develops, while in others true diabetes requiring continuous insulin is produced. Diabetes is a serious complication of acute pancreatitis, but prompt recognition and adequate treatment will control it in most cases. When a diabetic patient is attacked by acute pancreatitis, however, the diagnosis is grave indeed.

Blood Calcium.—We have been unable to confirm the observation of lowered blood calcium content in any appreciable number of cases. The test is expensive, and the finding of but a few questionably low normal readings has led to abandonment of the test as a routine procedure.

Diagnosis.—A correct diagnosis depends upon: 1. Consideration of acute pancreatitis as a possible cause of abdominal emergencies. 2. Severe pain in the upper part of the abdomen, usually requiring more than ¼ grain of morphine for relief. 3. An elevated blood diastase level. 4. Leukocytosis (count of 15,000 to 20,000 per cubic millimeter of blood, with polymorphonuclears around 90 per cent).

MANAGEMENT

In our series up to 1935, patients in the early stage were operated upon, with a mortality of 46 per cent. During the past five years we have treated 122 patients by conservative, nonoperative measures, with a mortality rate of only 3 per cent.

The great problem in the conservative management of acute pancreatitis is diagnosis. Therefore, having excluded perforated peptic ulcer, ruptured gallbladder and mesenteric thrombosis from the diagnostic field, and fortified oneself with an elevated blood diastase reading in a suspected case, it is permissible to proceed with expectant treatment. If there is any reasonable doubt about the diagnosis it is a wise precaution to make a small exploratory incision with the region under local anesthesia, for the surgeon will incur less censure if he operates on a patient with actue pancreatitis than if he misses the diagnosis of perforated ulcer.

Moreover, when the decision is made not to operate on a given patient, this should not mean the abandonment of surgical principles. Constant supervision of the patient, with repeated examinations of the abdomen, is mandatory in order that the plan of treatment may be altered to meet changes in the physical observations.

The excruciating pain of acute pancreatitis demands full and repeated doses of morphine. Vomiting and distention are relieved by continuous gastric suction and hot stupes; and, since much of the distention is due to [illegible] of the [illegible]lon, repeated enemas and the use of the rectal tube are of great value. It is important to introduce the duodenal tube into the stomach even if vomiting is minimal or absent. Gastric suction invariably affords relief from epigastric distress, which is often due to air swallowed early in the attack. Indeed, in this respect it shares the honors even with morphine. The presence of shock, as shown by a lowered blood pressure reading, indicates the necessity for plasma or blood transfusion. Fluid levels are maintained by intravenous and subcutaneous injections of saline and dextrose. Blood sugar estimations should be made at intervals, for diabetes developing during an attack demands prompt recognition and early treatment, and, of course, affects the prognosis adversely. Daily estimations of the blood diastase should be obtained, though return to normal levels may indicate either resolution or increased disruption of the gland. Under this regimen the symptoms in favorable cases will abate in four or five days, though exacerbations, as indicated by return of fever and an elevated leukocyte count, may occur. During convalescence it is important to examine the upper part of the abdomen repeatedly for the presence of palpable masses, indicating the development of abscesses or pseudocysts. These require evacuation if a septic type of fever returns and the leukocyte count is again elevated. Often this occurs after the patient has been discharged from the hospital. One factor in the prevention of recurrence is surgical removal of coexisting disease of the biliary tract. Since the gallbladder is diseased in over two-thirds of the patients, investigation and correction of coexisting pathologic change in the gallbladder is an essential feature of the follow-up.

SUMMARY AND CONCLUSIONS

1. The incidence of acute pancreatitis is increasing, owing to a greater awareness of the disease.
2. Blood diastase estimations provide valuable confirmatory evidence to support clinical evidence.
3. Conservative treatment is the treatment of choice.

RESUMEN Y CONCLUSIONES

1. La incidencia de la pancreatitis aguda a pesar del mayor cuidado respecto a la enfermedad.
2. Las estimaciones de la diastasa sanguínea proporcionan valiosa evidencia confirmatoria en apoyo de la evidencia clínica.
3. El tratamiento de elección es el conservador.

RIASSUNTO

1. L'incidenza di pancreatiti acute e' in aumento, fatto dovuto alla migliore conoscenza della malatiia.
2. I valori della diastasi ematica convalidano il sospetto clinico.
3. Il trattamento di scelta e' quello conservativo.

RÉSUMÉ ET CONCLUSIONS

1. Le fréquence des pancréatites aigues est plus grande, l'ttention étant plus ouverte.
2. Les diastases du sang sont d'une grande valeur pour confirmer le diagnostic clinique.
3. Le traitement conservateur estle traitement de choix.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

1. Die akute Bauchspeicheldruesenentzuendung kommt in wachsendem Masse zur Beobachtung, weil man sich des Vorkommens der Erkrankung mehr als frueher bewusst ist.
2. Die Diastasebestimmungen im Blut sind ein wertvolles Hilfsmittel zur Stuetzung der klinischen Diagnose.
3. Konservative Behandlung ist die Methode der Wahl.

SUMÁRIO E CONCLUSÕES

A incidencia da pancreatite está aumentando devido ao maior conhecimento da doença.

A avaliação da diastase sanguinea oferece valiosa confirmatória evidencia aos achados clinicos.

O tratamento conservadôr é o tratamento de escolha.

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Echoes of the Past

XIII. THE CADUCEUS, EMBLEM OF MEDICINE

Medical history reveals many alluring myths and mystical thoughts created by the primitive mind It is therefore not surprising that many ancient documents are steeped in fancy and have no basic reality. Thus it is that myth is inevitably entwined with the history of medicine.

To a great extent the role of the serpent as a symbol of medicine is based on mythology. Its first acceptance goes back to ancient Egypt and India, where the worship of serpents (ophiolatry) was a common practice.

The reason for this worship is not without explanation.

The serpent, alone of all animals without limbs, moves with celerity, is a progression of rhythmic curves. Moreover, the serpent casts off its skin, which led the ancients to believe that it renewed its youth. The serpent was known to have a long life, and immortality was ascribed to it. Snake poison was well known among primitive peoples. This connected the ancient concept of the serpent with supernatural power, and thus it was respected as a deity.

Belief in the healing power of the serpent was popular in the Mediterranean countries. In Europe this tradition of healing originated in Thessaly. Here Asklepios, a prince of Thessaly, became the god of medicine. When, as Aesculapius, he became the God of the healing art he was invariably represented by a staff with serpents coiled around it.

The Greek god Hermes, messenger of the gods and sometimes said to be the half-brother of Aesculapius, was identified by the Romans with Mercury. His symbol, the caduceus, was given him by Apollo. According to the Encyclopaedia Britannica, the story was that Hermes found two serpents knotted together while fighting; he separated them with his wand, which, crowned by the serpents, became a symbol of the settlement of quarrels. A pair of wings was sometimes attached to the top of the staff in token of the speed of Hermes as a messenger. The caduceus, therefore, symbolized Hermes as the god of commerce and peace, and among the Greeks it was the distinctive mark of heralds and ambassadors.

It would appear, therefore, that the caduceus has scant claim to medical importance and should not be used as the symbol of medicine. That right should be given the signum of Aesculapius, and a single snake coiled around a knotted staff.

—*Bernard J. Ficarra, M.D., F.I.C.S.*

Accurate Determination of Femoral Length

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IT is well known that accurate determinations of femoral length are a necessity when intramedullary nails are used as a means of fixation for femoral fractures. Since clinical measurement from the greater trochanter to the articular surface of the lateral femoral condyle is a very gross estimate of femoral length, a more accurate method was sought. It has been my experience that the method here described gives accurate determinations. Its simplicity facilitates its use.

Figure 1 is a diagrammatic sketch of a piece of clear plastic 2 cm. square and 60 cm. long. On one surface, lead is embedded to form transverse calibrations at every centimeter. The middle 20 cm. is left clear of calibrations except for one directly in the middle of the instrument. To determine femoral length, the calibrated plastic rule is taped to the unaffected thigh in a line from the greater trochanter to the midsaggital plane of the lateral femoral condyle. The lead calibrations are placed in either a ventral or a dorsal position. The hip and the knee are maintained in complete extension and the femur in neutral rotation. Care is taken to place the middle lead calibration at a point approximately corresponding to the midshaft of the femur.

Two anteroposterior roentgenograms are taken by the technic used for osseous detail; one of the proximal femoral shaft, the other of the distal femoral shaft. The views reveal a femoral shadow with a parallel centimeter calibration. Since object-to-plate distance is the same for the femur as for the calibrated rule, the distortion factor is canceled.

To determine the length of the femur, the calibrated centimeters in each view are added, to the sum of which is added 20 cm. (the length of the uncalibrated portion of the rule). The total represents accurate femoral length.

RÉSUMÉ

L'auteur décrit un nouel appareil pour le mesurage exact du fémur. C'est une pièce de plastique, 2 cm carré, 60 cm de longueur. La surface est rayée par des lignes de plomb à chaque cm. Le 20 cm mitoyen n'est pas marqué sauf pour une rayure au mileu de l'appareil. Afin de déterminer la longueur d'un fémur, l'appareil est placé à l'aide de diachylon sur la cuisse normale sur une ligne passant du grand trochanter à la face latérale et saggitale du condyle fémoral. Les rayures au plomb peuvent être ventrales ou dorsales. La hanche et le genou sont placés en extension complete et le fémur en rotation neutre. On prendra soin de placer la rayure moyenne à environ mi-chemin. Deux clichés sont pris en position antéro-postérieure pour les détails osseux. Le premier, pour la partie proximale, l'autre distale. du fémur. On voit alors l'ombre du fémur avec la tige calibrée en parallèle. Les comparaisons ne sont pas changées à cause de la position de la régle parallèle au fémur.

Pour déterminer la longueur exacte du fémur, on ajoute 20 cm à la calibration lue sur le cliché radiologique. Le total représente la longueur exacte du fémur.

ZUSAMMENFASSUNG

Der Verfasser beschreibt eine neue Vorrichtung zur genauen Messung der Laenge des Femurs. Das Instrument besteht aus einem 60 cm langen durchsichtigen Zelluloidstab mit einer Querschnittsflaeche von 2 cm.^{2} In eine Oberflaeche ist eine Bleimarkierung, die jeden

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Submitted for publication Aug. 1, 1951

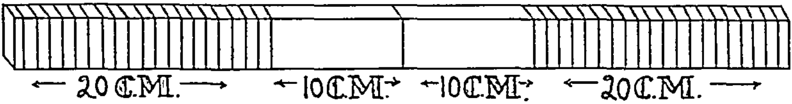

Fig. 1.—Diagrammatic sketch of calibrated plastic measuring instrument.

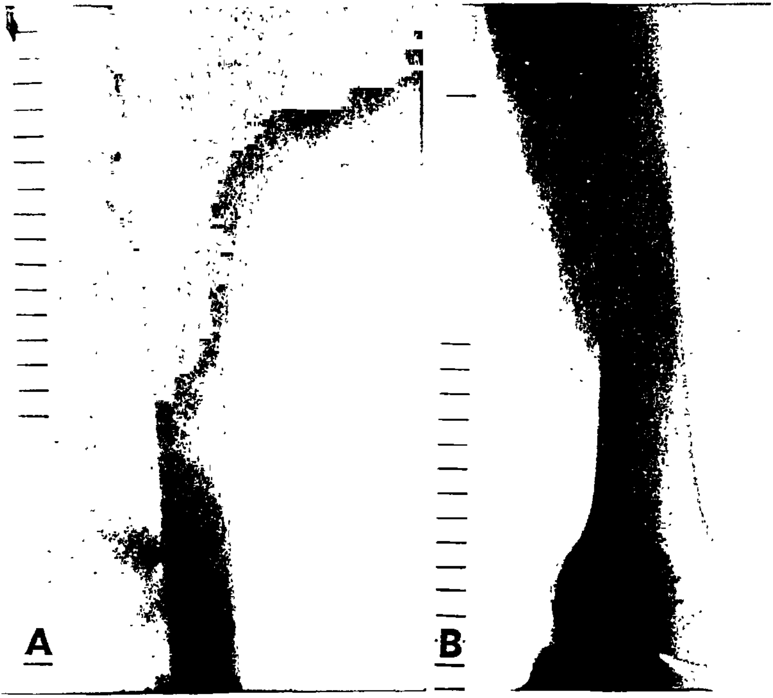

Fig. 2.—Roentgenograms of femoral shaft (see text).

Zentimeter der Laenge nach angibt, eingelassen. In der Mitte sind 20 cm der Kalibrierung ausgelassen bis auf eine einzige Markierung genau in der Mitte des Instruments. Zur Bestimmung der Femurlaenge wird der markierte Stab am Oberschenkel der gesunden Seite mit Heftpflaster befestigt und zwar in einer Linie, die vom grossen Trochanter zur sagittalen Mittelebene des lateralen Condylus fuehrt. Die Bleimarkierungen koennen entweder ventralwaerts oder dorsalwaerts gerichtet sein. Huefte und Knie werden voellig gestreckt gehalten, und der Oberschenkel befindet sich in unrotierter Mittelstellung. Es ist darauf zu achten,

dass sich die Bleimarkierung der Mitte des Instruments an einer Stelle befindet, die ungefaehr der Mitte des Oberschenkelschaftes entspricht.

Dann werden zwei Roentgenaufnahmen in ventrodorsaler Strahlenrichtung mit der ueblichen Knochentechnik ausgefuehrt, eine von der proximalen, die andere von der distalen Haelfte des Oberschenkelschaftes. Die Aufnahmen zeigen die Zentimeterkalibrierung parallel zum Schatten des Femurs. Da der Fokusfilmabstand fuer den Oberschenkel der gleiche ist wie fuer das Messinstrument, kann der Verzeichnungsfaktor unberuecksichtigt bleiben.

Zur Bestimmung der Femurlaenge werden die kalibrierten Zentimeter beider Aufnahmen addiert und 20 cm (die Laenge des unmarkierten Abschnitts des Instruments) hinzugefuegt. Die Gesamtsumme ergibt die genaue Laenge des Oberschenkelknochens.

RESUMEN

Se describe un nuevo dispositivo para la medición exacta de la longitud del fémur. Consiste de una pieza de plástico transparente de 2 cm. de ancho y 60 cm. de largo. Sobre una superficie tiene incrustaciones de plomo dispuestas en marcas transversales por centímetros. Los 20 cm. intermedios no tienen marcas, excepto una a la mitad del instrumento. Para determinar la longitud femoral se aplica ligeramente la regla plástica graduada al muslo no afectado, sobre una línea del trocánter mayor al plano mediosagital del cóndilo femoral lateral. Se colocan las marcas graduadas de plomo en posición ventral o dorsal. Se mantienen la cadera y la rodilla en extensión completa y el fémur en rotación neutral. Se tiene el cuidado de colocar la mitad de la graduación de plomo en un punto correspondiendo aproximadamente a la mitad del capitel femoral.

Se toman dos röntgenogramas anterioposteriores con técnica para detalle óseo, uno del capitel femoral proximal y otro del capitel femal distal. Las placas revelan una sombra femoral con graduación paralela en centímetros. Dado que la distancia objeto-placa es la misma para el fémur que para la regla graduada, queda eliminado el factor distorsión.

Para determinar la longitud femoral, se agrega la graduación en centímetros de cada vista, a cuya suma se agrega 20 cm. (longitud de la porción no graduada de la regla). El total representa la lomgitud femoral exacta.

RIASSUNTO

L'Autore descrive un nuovo metodo di accurata misurazione del femore. Trattasi di una striscia di materiale plastico 2 cm. per 60 cm. di lunghezza. Una delle superfici e' suddivisa in centimetri a mezzo di segmenti di piombo incorporati nella plastica. La porzione ventrale della lunghezza di 20 cm. e' libera di ogni segno esclusa una linea trasversa indicante il punto di mezzo dello strumento. Per determinare la lunghezza del femore il metro plastico e' fissato con cerotto adesivo sulla coscia non affetta secondo una linea che va dal grande trocantere lungo il piano mediosaggitale del condilo laterale del femore. La coscia ed il ginocchio sono tenute in perfetta estensione ed il femore in rotazione neutra. Si tenga cura di piazzare il punto di mezzo del metro approssimativamente alla meta' della diafisi femorale. Due radiogrammi antero posteriori sono presi con la comune tecnica per ossa, uno della diafisi prossimale, l'altro della diafisi distale. Essi presentano un segmento di femore con delle suddivisioni centimetriche lungo di esso.

Poiche' la distanza oggetto-film e' la stessa sia per il femore che per il metro, l'errore di proiezione e' nullo. Per determinare la lunghezza del femore i centimetri in ciascun film sono assommati e allo loro somma e' aggiunto 20, (la porzione di metro non calibrato). Il totale rappresenta accuratamente la lunghezza del femore.

SUMÁRIO E CONCLUSÕES

O autor descreve um novo instrumento para medida acurada do comprimento do femur. Ele consiste em uma peça de materia plastica clara de 2 cms. quadrados de 60 cms. de comprimento. Sobre uma superficie estrias de chumbo são aplicadas cormando calibratões transversais, em cada centimetro. Os 20 centimetros medios não levam calibrações, excéto uma no meio do instrumento. Para se determinar o comprimento femural a régua plastica calibrada é colada com ésparadrapo á côya não afetada sobre uma linha que vae do grande trochanter ao plano medio sagital do condilo femural externo. As calibrações de chumbo são colocadas seja em posição dorsal ou ventral. A bacia e o joêlho são mantidos em completa extensão e o femur em rotação neutra. Precauções são tomadas para que o meio da calibração de chumbo fique colocado em um ponto que corresponda exatamente ao meio da diafise femural.

Dois roentgenogramas antero-posteriores são tomados pela tecnica de detalhe osseo:—um da parte proximal e autro da parte distal do femur. As peliculas mostram a imagem do femur com uma calibração paraléla em centimetros. Desde que a distancia objeto-filme é a mesma para o femur como para a régua calibrada, o fatôr distor são não existe.

Para se determinar o comprimento do femur, somam—se aos centimetros de cada pelicula 20 cms., correspondentes á porção não calibrada da régua.

O total representa o comprimento acurado do femur.

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Refrigeration in Medicine and Surgery

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PHILADELPHIA

ONE hundred and forty-nine years ago, Dr. James Currie,[1] of Edinburgh, reported that he had lowered the temperature of Richard Sutton to 83 F. while keeping him in a brine bath at 40 F. over a period of forty-five minutes. Careful study of the literature fails to show any further work on this subject until Temple Fay and Lawrence Smith[2] announced their observations in a careful report on "Temperature Factors in Cancer and Embryonal Cell Growth". At approximately the same time, Allen[3] encouraged the use of through-and-through chilling of extremities for surgical anesthesia. Despite the belief that refrigeration and crymotherapy are problems of recent medical knowledge, it is interesting to recall the operations on Napoleon's half-frozen soldiers described by Larrey[4] in 1832. Weir Mitchell[5] in "Injuries of Nerves and Their Consesequences" (Lippincott, 1872) reported sedation with cold.

The bases of the action of reduced temperatures on living organisms, from the lowest to the highest, are abundantly given in the book by Leyet and Gehenio.[6] Within physiologic limits, the velocity of most biologic processes varies directly with the temperature. At temperatures close to freezing there is almost complete cessation of cellular activity. Another pertinent observation is that conduction in a nerve trunk fails at, or below, certain critical temperature levels (25 to 30 C. in warm-blooded animals), thus accounting for the phenomenon of refrigeration anesthesia.[7] Recent work by Smith[8] has reported that infections of an extremity can be treated successfully by chilling the affected part for a prolonged period; and Trumper and Hutter[9] found that ice applied to an injection site caused slow absorption of penicillin into the blood stream.

Gilbert and his associates,[10] following this line of work, reasoned and proved that a combination of cold and locally infiltrated penicillin would produce a high concentration of the drug at the site of infection in an extremity. We have proved clinically the value of decreasing the metabolism of severely injured extremities with refrigeration, and at the same time causing peripheral vasodilation by means of lumbar sympathetic block; thus decreasing the absorption of toxins and at the same time decreasing the spasm of blood vessels. In this way an attempt is made to bring the metabolism of the extremity into keeping with the available circulation.

In the last few years, many papers[11] have been published on the use of refrigeration as an anesthetic agent for debilitated patients needing amputation. In our opinion, sufficient attention has not been focused on the use of refrigeration as a therapeutic and anesthetic agent for minor surgical procedures as well as in the presence of certain peripheral vascular states. During the past five years hypothermia has been tried on many patients, and, by trial and error, certain indications for its use have been found.

It is a far cry from the days of Braud, who advocated and practiced the use of iced water for the immersion of hyperthermic typhoid patients, to the present treatment of hyperthermia. Today the wheeled bathtub, formerly employed for the bedside immersion of patients, is a museum piece, although even now it is to be found in the cellars or garrets of most hospitals. With the advent of modern ideas concerning the local and general

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metabolic effect of cold have come new and more refined methods of applying refrigeration locally and generally in the treatment of patients of all kinds who have an excessive elevation of temperature.

We have employed, for the past seven years, a mechanical refrigeration apparatus with blankets of various sizes. These are composed of many tubules, through which isopropyl alcohol is pumped, after chilling by the same principle as employed in the ordinary electric refrigerator. This apparatus is thermostatically controlled, so that by the turn of a dial temperatures in the blanket can be elevated or reduced and will thereafter automatically remain constant. For example, a limb may be chilled in three or four hours so that painless amputation is possible; or, with a higher temperature set, moderate local or general refrigeration can be secured. The bed is made up with the large blanket under the patient, and fever can easily be controlled by the mere turn of a dial. By this method, inefficient and awkward spongings and the application of cold compresses to the axillae, groin and trunk are avoided.

1. *Medical Uses.*—1. This technic has been employed in cases of *hyperexia* following hemorrhages of various degrees, head injuries and operations, depending upon the cause and location of the disturbance. We have also used it for *hyperexia in certain medical states,* such as thyroid crisis and pneumonia. For severe pain, the application of refrigeration in some form is highly effective. In the presence of acute pleurisy, cold applied to the thoracic area to which the pain is referred will often bring relief, which frequently persists long after the refrigeration ceases, and sometimes permanently.

A 35-year-old clergyman entered the hospital complaining of excruciating pain in the right side of the chest, induced by breathing. A friction rub was heard over this area. The application of the small refrigeration blanket to the chest brought relief, which persisted. It is probable that the disappearance of the friction rub two days later resulted from the moderate accumulation of pleural fluid.

We have also used this method in cases of *migraine and other vasospastic pain or pain due to vasodilatation,* applying cold to the head by a specially designed tubulated blanket, which often brings quick relief. It has been used also in cases of continuing enteric fever and other severe toxemias, in which heat generation and regulation are disturbed.

2. *Anesthesia.*—For *incision and drainage of infections,* one of the most frequent of any active surgical service—especially incision and drainage of abscesses of the hand, finger, foot and toes—multiple anesthetic agents have been used. Nerve block with procaine hydrochloride is frequently unsuccessful. Its use for a local block at the bases of fingers or toes may interfere with the circulation of the part. The use of procaine over the abscessed cavity is not recommended by many authorities, because of the possibility of spread of the infection to adjacent tissues. A simple and practical method that gives excellent anesthesia is to insert the infected part into a container of ice. This method can be used in the office or ward and may make it unnecessary to use the operating room for minor procedures, an important consideration in these times, when good nursing personnel is at a premium. Our routine is merely to encase the part in finely cracked ice for thirty to sixty minutes, without a tourniquet. The incision is then made, and the part may be returned to the ice for relief of pain. During the past year many patients have been treated with this routine, without delay in healing.

Débridement of ulcers is both practical and simple with ice anesthesia. Ulcers needing débridement can be surrounded with fine ice, and within thirty minutes one may remove necrotic tissue and crusts without pain. In these cases ice is of value not only as an anesthetic but as a therapeutic agent.

The *reduction of fractures* under refrigeration anesthesia has already been described.[12] We wish to stress the practicability of reducing a fracture dislocation of a finger, hand or toe by anesthetizing the part with ice. The mere packing of the part for thirty to sixty minutes in a can of finely cracked ice is sufficient for the necessary manipulation.

3. *Surgical Uses.*—That hypothermia of *burned areas* results in decreased pain, edema and tissue damage has already been reported by Allen, Crossman and Safford.[13] Clinically, there is no doubt in our minds that the application of cold to an early burn will cause a marked decrease in the amount of pain and exudation. With the gradual rise in temperature after a period of decreased temperature for ten days, one notes that the slough can easily be removed and that islands of epithelium are present. We recommend the use of hypothermia immediately for six to ten days, after which the accepted form of treatment for the granulating surface may be instituted.

Many athletic coaches are familiar with the use of ice immediately after a severe *strain* or *sprain* has occurred. We have found that patients seen soon after injury respond with earlier motion and decreased edema if the part is packed in ice for one to two hours. When the part is refrigerated, there is no pain. Motion while the extremity is being refrigerated will improve the local condition by actually improving the circulation and the tissue tone.

The refrigeration technic is also valuable for *local use after surgical procedures.* Skin temperatures beneath wound dressings or casts can be reduced by local reduction of temperature, either by the use of ice bags or in the form of mechanical refrigeration. This is of definite value in orthopedic procedures, as is proved by the work of Schnaubel.[11] In 345 cases, he observed that subjectively the patients who have ice applied locally are far better than those who have none applied during the postoperative period. If there is a prolonged low temperature, metabolism is reduced and allowance must be made for slower healing of the tissues.

Certain peripheral vascular conditions provide another use for this technic. Recently we have had limited experience in the use of refrigeration associated with sympathetic blocks:

G. H., aged 64, was admitted to the hospital with a severely compounded comminuted fracture of the ankle. The wound was extensive, and on admission to the hospital the foot was cyanotic and cold. No dorsalis pedis pulsation was noted, nor could one detect a pulsation over the posterior tibial circulation. The question at this time was whether to amputate the foot or attempt conservative measures for a time. The patient was treated for shock and taken to the operating room, where the wound was debrided and the fracture reduced. After careful exploration of the wound it was apparent that the only large vessel which remained complete was the posterior tibial, although this vessel appeared contracted. The wound was closed primarily and a cast applied. At this time the patient was turned on his side and a block of the first, second, third and fourth lumbar sympathetic nerves was done. The cast was bivalved and the patient was returned to the ward with only the posterior half of the cast immobilizing his foot. He was given a transfusion and large doses of penicillin. The foot and leg were then encased completely in chipped ice and kept so for ten days. Every two days the patient was turned on his side and a lumbar block, as before, was done. At the end of ten days the ice was decreased gradually. On the fifteenth hospital day, the ice was entirely removed and the foot examined. The toes were viable and the wound was completely healed, except for a superficial slough over the anterior part of the foot. After débridement, a graft was applied to this area and the patient was discharged in a cast, to be followed up in the orthopedic clinic for his fracture.

In our opinion, this patient was kept in balance with regard to his limited circulation through a decrease in the metabolism of his foot by the use of ice. At the same time, the spasm of his remaining blood vessels was relieved, and gradually a collateral circulation was established.

SUMMARY

The authors describe the medical, anes-

thetic and surgical uses of refrigeration in the treatment of conditions other than amputation. One illustrative case of its medical use is reported, as is 1 case of peripheral vascular disease in which refrigeration was successfully used. This paper was written in the hope that it will stimulate the use of refrigeration at clinics and hospitals, where it has generally has been used only for amputions or not at all.

RÉSUMÉ

A part l'amputation, les auteurs décrivent les usages médicaux, anesthésiques et chirurgicaux de la réfrigération, avec un cas à l'appui: celui d'une lésion vasculaire périphérique où la réfrigération fut employée avec succès. Le but de cet article est d'inciter les hôpitaux et les cliniques à se servir davantage de la réfrigération pour autre chose que l'amputation.

ZUSAMMENFASSUNG

Die Verfasser beschreiben die medizinische, anaesthesiologische und chirurgische Anwendung der Gefriermethode ausserhalb von Amputationen. Es wird ein Fall zur Erlaeuterung des medizinischen Gebrauchs und ein weiterer von peripheren Gefaesserkrankung berichtet, wo die Einfrierung erfolgreich zur Anwendung kam. Aie Arbeit wurde veroeffentlicht in der Hoffnung, die Anwendung der Gefriermethode an Kliniken und Krankenhaeusern anzuregen, wo sie bisher nur zu Amputationen oder ueberhaupt nicht herangezogen wurde.

RESUMEN

Se describen los usos médicos, anestésicos y quirúrgicos de la refrigeración respecto a la amputación. Se da a conocer un caso ilustrativo de su uso médico, enfermedad vascular periférica, en el que la refrigeración fué completamente Satisfactoria. Este artículo fué escrito con la esperanza de estimular el uso de la refrigeración en clínicas y hospitales.

RIASSUNTO

Gli Autori descrivono il valore medico, anestetico e chirurgico del refrigeramento indipendentemente dall'amputazione. E' riportato un caso illustrativo di turbe vascolari periferiche in cui il refrigeramento e' stato usato con successo. Questo articolo e' stato scritto nella speranza di stimolare l'uso del refrigeramento in cliniche ed Ospedali.

SUMÁRIO

Os autôres descrevem os usos medicos, anesteticos e cirurgicos da refrigeracão, amputação a parte. Um caso ilustrativo de seu uso medico é relatado, como tambem um caso de doença vascular periférica no qual a refrigeração foi usada com sucesso. Este trabalho foi escrito na esperança de que estimulará o uso da refrigeração em clinicas e hospitais.

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Primary Retroperitoneal Teratoma

Successful Removal from a Boy Three Weeks Old

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THE patient in the case here reported, as far as we could determine, was one of the youngest infants successfully operated upon to date for primary retroperitoneal teratoma. It is also the first case of teratoma of this region registered in the Brazilian literature.

In view of the existing confusion as to the origin and pathogenesis of teratomas, it would seem proper to make a brief exposition of the subject and emphasize the significance of primary retroperitoneal tumors. We also give some data on these neoplasms, mainly teratomas.

Origin and Pathogenesis of Teratomas. —The complex histologic structure of teratomas and their resemblance, in some cases, to human organisms, gave rise to confusions with other non-neoplastic growths and to a great deal of speculation as to their origin.

According to Willis,[1] teratomas are tumors containing several kinds of tissues foreign to their place of origin. With this conception in mind, congenital malformations and twin monsters are not included in this group, because they do not show the progressive and uncoordinated growth characteristic of true neoplasms. Tumors or malformations whose cells correspond to an embryonic, adult or metaplasic "status" of tissues and organs where they occur, are also excluded.

Teratomas are ordinarily classified into cystic or solid; into monodermoma, bidermoma or tridermoma, when tissues are derived from one, two or three embryo layers; and into embryonal and adult, according to the cellular maturity. These subdivisions, as Willis[1] says, are arbitrary, and in the same tumor it is possible to find a combination of all types. Subdivision of embryonal and adult types has some practical value, for in general the former is malignant and the latter benign.

The histogenesis of teratomas is still a matter of dispute. There are some theories that maintain the fetal conception of teratomas, ascribing to them the genesis of a vertebrate organism. Some authorities, such as Nicholson[2] and Willis,[1] do not accept this theory, for they believe that no teratoma containing a true spine or a somatic distribution of the parts, has been described. Other authors believe, like the aforementioned, that teratomas arise from pluripotential embryonic tissues which escape from the influence of Spemann's primary organizer during embryonic development. This point of view is also related to the congenital nature of these tumors and to their customary sites. Teratomas usually occur during youth and arise in tissues located on median or paramedian preaxial positions during embryonic development. As Budde (cited by Willis[1]) held, these locations suggest the operation of disturbances emanating from the embryonic primitive streak and its invaginated derivatives.

Primary Retroperitoneal Tumors. — Retroperitoneal tumors are neoplasms located in the space limited by the posterior parietal peritoneal layer and the anterior aspect of the posterior abdominal wall. The term "primary" refers to neoplasms not related to any of the organs found in this region or to metastases arising from distant tumors.

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Submitted for publication July 11, 1951.

According to Donnelly,[3] primary retroperitoneal tumors are more frequent than is believed. He estimated that up to 1946 at least 500 cases were reported. Most of the tumors were malignant neoplasms, and a great many were connective tissue forms. In a series of 95 cases reported by Donnelly,[3] only 13 tumors were benign.

Primary Retroperitoneal Teratomas.—Primary retroperitoneal teratomas are rare. In 95 cases of primary tumors of this region, Donnelly[3] found 2 teratomas. They are also rare in comparison with teratomas in other regions. In 82 cases studied by Willis[1] only 3 tumors were retroperitoneal. Palumbo and his associates[4] collected, including their own, 58 retroperitoneal teratomas recorded up to 1949. Since then, 7 more cases, including the one reported here,[5] have been added, making a total of 65. According to Palumbo and his co-workers,[4] 30 per cent of the cases were observed in infants in the first year of life. The average age for the whole series was 13 and the oldest 53. Tumors occurring on the left side were twice as frequent as those occurring on the right.

REPORT OF CASE

Clinical History.—J.A.S., a 21-day-old white boy, was brought to the hospital on Oct. 23, 1950, because of an enormous abdominal tumor. According to his parents, he was born at full term, but they noticed that his abdomen was abnormally large. They paid little attention to this. Ten days after the child was born, they took him to a doctor who prescribed some medicines which had no effect. On the twentieth day, they consulted another doctor (Dr. Augusto Rittes) who diagnosed an abdominal tumor and recommended immediate operation.

Physical Examination.—General examination (Edgard Ferraz Navarro) revealed the child to be dehydrated and dyspneic. He weighed approximately 3 Kg. The mucous membranes were discolored, but the boy's cry and movements were such as to indicate that his general condition was not serious.

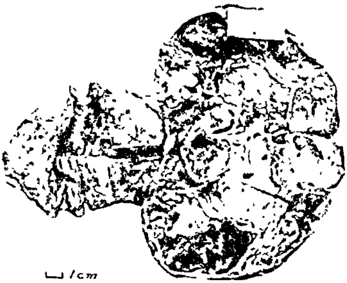

Fig. 1.—Gross appearance of tumor.

Inspection revealed an abdominal enlargement, most prominent in the upper left quadrant. Venous collateral circulation was present on the left side of the thorax and abdomen. No visible peristaltic or pulsatile movements were noticed. A tumor extending from the left hypochrondric region of the iliac fossa of the same side was palpated. It measured approximately 15 by 13 cm., and it was felt to be nodular and hard on the hypochondric region and soft and smooth on the iliac fossa. No intestinal sounds were noticed. The tumor was punctured and revealed a yellow and transparent liquid in the left hypochondric region, and a sanguineous liquid on the opposite side. The testicles were normal in size and position. Examination of the other systems gave negative results.

Our diagnosis was intra-abdominal tumor. Owing to the boy's dyspnea and the family's insistence, we decided to operate immediately.

Operation.—On the same day, which the patient under general chlorethyl ether anesthesia, the left side of the abdomen was opened through a median pararectal lateral incision. An enormous tumor located in the hypochondric and lumbar region appeared on the field. It was partially covered by an intestinal loop which was strongly adherent to the anterior abdominal wall. The loop was dissected and separated from the tumor, which was retroperitoneal. The posterior peritoneal layer was incised, and a large, nodular and cystic mass was found in the lumbar region in front of the kidney. Dissection showed that the tumor was completely isolated from the kidney and the adrenal gland, which appeared to be normal. The tumor's blood supply came

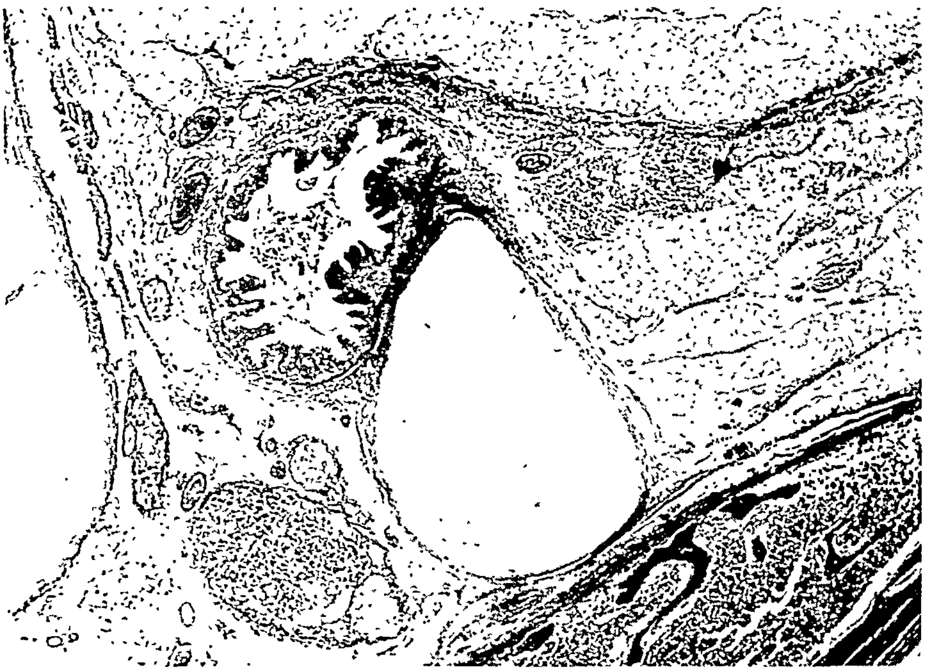

Fig. 2.—Section of tumor showing intestinal lumen, nerve ganglion, cartilage and bone with marrow.

from vessels located above the kidney and next to the spine. The tumor burst, and the cavity was filled with a sanguineous liquid, which, however, did not hinder the progress of the operation. The vessels of the tumor were ligated and the wound was closed in layers.

Course in Hospital. — The postoperative course (Venancio Alves Filho) was uneventful. The child weighed 2,800 Gm. the day after the operation. The sutures were taken off on the seventh day, and the wound healed by primary intention. An edema of the scrotum, noticed on the second day, disappeared spontaneously three days later. On the day following the operation the patient received 250 cc. of dextrose-sodium chloride isotonic solution subcutaneously, and water containing 5 per cent of dextrosol by mouth. After that he took only pure water "per os". He was fed on Nestle's partially skimmed fermented milk, in increasing amounts, until he weighed 3,455 Gm. at the age of 56 days. Vitamins were also administered. Thereafter he was fed with whole milk and vitamins. A postoperative roentgenogram of the abdomen gave negative results. The blood count revealed hypochromic anemia. The patient was discharged in good health and weighing 4,300 Gm., three months and fifteen days after the operation.

The patient was readmitted on May 23, 1951, and was in good health in spite of the persistent hypochromic anemia. His weight was 6,560 Gm. and his height was 67 cm. at the age of 7 months. Roentgenograms of the abdomen revealed no abnormality.

Pathologic Report.—The pathologic examination (Jorge Michalany) showed that the tumor consisted of two masses of tissues joined by a fibrous strand. The greater measured 11 by 8 by 4 cm. and the smaller 6 by 6 by 2 cm. Both masses were of solid and cystic formations. Several cystic cavities were open, and multiple calcified zones were felt. On cutting, the surface was found to be multicolored, and it was possible to recognize grossly several kinds of tissues, such as bone, cartilage, nerve and adipose tissue. Some cavities contained a clear or a sanguineous liquid and others contained sebaceous material.

Microscopic sections showed several kinds of fairly well differentiated tissues. Nervous tissue was represented by astrocytes, cavities lined by choroid plexus, ganglia and neuroepithelium. Cartilage and bone in all stages were present. Skin with hair follicles and sebaceous glands, intestinal lumen, adipose tissue and striated muscle were also noted. No undifferentiated tissues were seen. A small

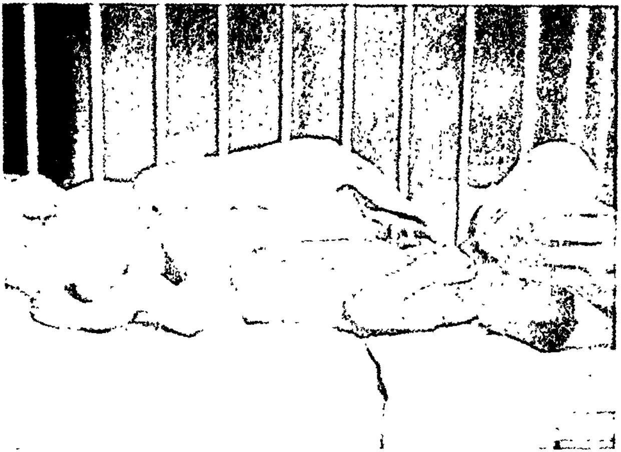

Fig. 3.—Child seven days after operation.

fragment of the adrenal gland was attached to the capsule of the tumor.

Diagnosis.—The diagnosis was adult type teratoma.

COMMENT

The survival rate after operation for retroperitoneal teratomas during the first year of life seems to outweigh the mortality rate. Analysis of the 58 cases collected by Palumbo and his associates[4] showed that 16 teratomas had developed at this age. Operation was performed in 9 cases, and only 2 infants died; all the nonsurgically treated infants died. The youngest patients successfully operated upon were of approximately the same age: 9 weeks in Willis'[6] case and 2 months in the case reported by Smith and Cochrane (cited by Palumbo.[4]) From the last cases reported in the literature, 1 patient was younger than ours (Gross and Clatworthy[24]); a teratoma containing a twin fetus was successfully removed on the fifth day of life.

The main symptoms of these tumors in children are the abdominal enlargement

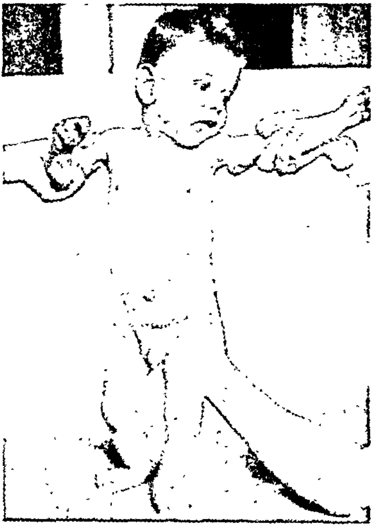

Fig. 4.—Child at age of 7 months.

noticed at birth, and the abdominal tumor. Constipation usually accompanies the aforementioned symptoms.

The diagnosis of primary retroperitoneal teratoma is made by exclusion. Pyelograms and a series of intestinal roentgenograms are necessary to exclude a tumor arising on these organs. The presence of calcified structures is almost sufficient evidence of the teratomatous nature of the growth. In the present case it was by oversight that the operation was performed without the preliminary roentgen examination. A metastatic tumor from the testicle may simulate a primary retroperitoneal teratoma. As Prym (cited by Willis,[1]) insisted, the testicles must be carefully examined because, in some cases, the testicular growth is so small that it cannot be noticed on physical examination. Riopelle[7] reported a case of "extragenital" chorioepithelioma in which the testicles were said to be clinically normal. After necropsy, microscopic examination of one of the testicles showed the embryonal teratoma responsible for the distant chorioepitheliomatous metastasis.

SUMMARY

A case of primary retroperitoneal teratoma removed from a boy 21 days old is reported. Since 1949, 6 more cases have been added to the literature, thus making, with the 1 reported here, a total of 65.

This is believed to be the first case reported in the Brazilian literature. The patient is one of the youngest infants successfully operated upon for primary retroperitoneal teratoma.

A brief exposition of teratomas and primary retroperitoneal tumors is presented.

RÉSUMÉ

L'auteur rapporte le cas d'un enfant de 21 jours opéré pour un tératome rétropéritonéal. Depuis 1949—les six nouveaux cas rapportés en plus de celui-ci portent le nombre à 65.

C'est le premier cas rapporté dansla littérature brésilienne. Le patient est parmi les plus jeunes opérés avec succès pour un tératome primitif rétro-pèritonéal.

L'auteur résume brièvement sur les *tératomes* et les *tumeurs rétropéritonéales*.

ZUSAMMENFASSUNG

Es wird ueber einen Fall von primaerem retroperitonealem Teratom, das an einem 21 Tage alten Knaben entfernt wurde, berichtet. Seit 1949 sind in der Literatur sechs weitere Faelle bekannt geworden, was die Gesamtzahl einschliesslich des hier veroeffentlichten Falles auf 65 bringt.

Die Verfasser glauben, dass ihr Fall der erste in der brasilianischen Literatur berichtete ist.

Der Kranke gehoert zu den juengsten an einem primaeren retroperitonealen Teratom operierten Kindern.

Es wird eine kurze Darstellung der Teratome und des primaeren retroperitonealen Tumors gegeben.

RESUMEN

Se comunica un caso de teratoma retroperitoneal primario extirpado en un niño de 21 días de edad. Desde 1949 se han agregado a la literatura 6 casos más, sumando un total de 65 con el que se da a conocer en este artículo.

Se cree sea el primero dado a conocer en la literatura brasileña, siendo uno de los pacientes más jóvenes operados satisfactoriamente de teratoma retroperitoneal primario.

Se presenta una breve exposición sobre teratomas y tumores retroperitoneales primarios.

RIASSUNTO

E' riportato una caso di teratoma retroperitoneale primario asportato in un giovane di 21 anni. Dal 1949 altri 6 casi

sono stati aggiunti in letteratura, assommando cosi complessivamente a 65. Si ritiene che questo sia il primo caso riportato nella letteratura Brasilena. Il paziente e' uno dei piu' giovani operato con successo per teratoma retroperitoneale primario.

Una brev esposizione dei teratomi primari retroperitoneali e' presentata.

SUMÁRIO

E' relatado um caso de teratoma retroperitonial removido de um menino com 21 dias de vida. Depois de 1949 seis outros casos foram adicionados á literatura, completando assim o caso aqui relatado o total de 65.

Acredita—se que seja o primeiro caso relatado na literatura brasileira. O paciente é uma das mais jovens crianças operadas com exito por teratoma retroperitonial primário.

Uma breve exposição de teratomas e tumôres retro peritoniais é apresentada.

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Sulfhydryl in Tissue Respiration and Repair as Applied to Burns in Ophthalmology

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EIGHT thousand patients lose one or both eyes as a result of chemical or thermal burns in a single year. Over 100,000 patients suffer serious accidental eye burns a year.

When we hear the wail of an ambulance siren and see a patient with a broken leg taken speedily to the hospital, we agree that this is as it should be. It is a serious emergency. But it is much more of an emergency and can be much more serious when an acid or alkali produces serious burns in the eyes. The chemical process of corneal deterioration is going on. Here time is a precious element. The sooner this chemical process is stopped the more chance the patient has of saving his sight. Even thermal burns must have quick attention to stop the damaging process and stimulate the tissues to heal as quickly as possible. It is this quick healing that prevents scarring.

This paper is concerned with a sulfhydryl solution which not only stimulates prompt healing but prevents infection. My associates and I use sulfhydryl preparations identified by the trademark Hydrosulphosol,* in the form of a concentrate in castor oil as advocated by Kuhn[1]; a 1:2 aqueous solution as reported by myself, or a newer preparation just brought out as hydrosulphosol gel. In this gel the concentrate is suspended in carboxy-methylcellulose and applied directly into the eye, the eye being immobilized by pressure dressing for twenty-four hours.

The advantage of hydrosulphosol gel is that it is water-soluble and may be used at the plant in emergency treatment after thorough irrigation with water. The early emergency use of hydrosulphosol gel stops at once the deleterious action in a chemical burn. Time is saved while the patient is being brought to the ophthalmologist, generally some distance from where the accident occurred.

Reports on medical progress often have been dramatized by referring to a new drug as a "miracle drug". I do not find it necessary to use this superlative to indicate the value of the treatment I recommend. But I can say unequivocally that by the use of this new drug I can report successful prevention in numerous cases, possibly hundreds of the development of one of the most tragic of man's infirmities—blindness. Reference will be made later to the successful use of the medicament for another condition, in which diabetic complications were involved. Even in these cases the condition treated clearly has its ophthalmologic implications.

Ophthalmology, possibly for the first time, has taken the lead in testing and proving a new drug whose potential value has barely been explored.

In the testing of an entirely new type of therapy which involves use of a medicament whose mode of action is not thoroughly understood, resort must be made to conjecture and surmise as to why and how certain results are produced. It has been appropriately suggested that "it would indeed be a sad state of affairs if conjectures and surmises were excluded from thinking. If this were so, many ideas and theories which eventually prove scientifically sound would never have reached the light of day."[2]

Possibly one of the most controversial subjects dealt with in medicine is wound healing. The number of therapeutic methods of treatment used in this general field probably reaches into the hundreds. An exception exists in the field of ophthalmology. Few, if any, methods used to treat wounds on other parts of the body are suitable for application to eye injuries. Particularly is this true of the treatment of burns.

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*Hydrosulphosol is T M Reg U S Pat Off for E C [illegible] & Co., Inc., Fillmore, California, brand of sulfhydryl. Submitted for publication

The data presented in this report are based on observations dating from the simple, almost accidental adoption of this new therapy more than eight years ago. Such a successful clinical application has been made of sulfhydryl, as contained in the products identified by the trademark hydrosulphosol, that every possible clue as to the chemical processes involved has been studied. This paper is by no means intended to provide a final solution of the problem; but with the aid of biochemical research the position of conjecture and surmise is being transferred gradually into one of logic and acceptance. Certainly clear thinking on this subject does not support summary dismissal of evidence relating to a new type of therapy on the ground that the condition being treated would have healed regardless of what treatment was used.

Thousands of burned patients die each year in spite of having received the most careful attention within the power of the medical profession. The permanent injury entailing loss of vision by patients with eye burns is a matter of personal knowledge to ophthalmologists.

So far, in the field of ophthalmology, this medicament has been limited to local application. The response observed, however, has been decisive enough to permit its evaluation as compared with compounds used previously. Particularly is this true when one is dealing with major eye burns caused by chemicals whose progressive, destructive action is too well known to need review.

In an attempt to present every available bit of evidence and with the thought of inviting critical examination of the results, I have published a series of articles on this therapy.[3] As the result of my experience, certain basic facts become apparent. These results have been verified and added to by others.

Prompt Care Essential.—I have become much concerned with the complacency with which some of my colleagues engaged in general surgery and general practice view the problem of treating eye injuries. A statement I believe to be too loosely applied is: "Why worry about eye injuries? The eye often heals quickly without any treatment at all." Is not this true to a degree of any tissue of any part of the body, provided complications are not encountered?

If the general assumption were true that eyes will heal quickly without special treatment or skilled care, should we be encountering, every day, persons who are faced with total blindness; persons who have only partial vision in both eyes; persons who are blind in one eye, and multitudes who must wear glasses in order to lead reasonably comfortable and active lives?

If the same percentage of our population were forced to resort to the aid of crutches as must now wear glasses, we should obviously have a catastrophe of alarming proportions. What is too frequently forgotten is that a small portion of the eye may represent a considerable percentage of the total area of that organ. The injury caused by a foreign body may be minor in area but major in depth. The final outcome of treatment may well rest upon a small margin between recovery of economic eyesight or a complete loss of vision.

In industrial ophthalmology the time factor is of the utmost importance. The critical and dangerous period for serious chemical and thermal eye burns is reached within the first twenty-four to forty-eight hours. The difference between saving or losing vision may rest on the skill and effectiveness with which such an injury is first handled.

Many have thought we were making progress when we improved the range of vision afforded by making available new and better artificial lenses. Much has been done to perfect the appearance and movement of artificial eyes for those who have lost one or both eyes. But greater progress has come from the efforts of ophthalmologists like Hedwig S. Kuhn, who has striven first to improve methods of protecting the worker from injury and then to find more effective means of treatment for those who are injured accidentally in spite of all safeguards.

Clinical "Control".—Those who have been intimately acquainted with the problems involved are aware of the difficulties presented in trying to evaluate therapy utilized in the general field of wound healing. So-called "control" studies of clean wounds on animals have proved unproductive of results. Apparently the same situation exists in the treatment of eye burns. However, animal experimentation has supplied ample evidence of the fact that this product can be used safely and freely in and about the eyes.

After conducting a series of experiments on animals, Carpenter[4] stated: "Frankly, we are of the opinion that clinical observation of human eye burns treated with hydrosulphosol will have to be relied upon to correctly evaluate the therapeutic efficiency of this compound".

In considering the application of an entirely new treatment for eye injuries I had certain advantages. One was the fact that until the introduction of hydrosulphosol ophthalmologists were virtually without an effective therapeutic aid in the management of serious eye burns.

Despite the application of every available method of treatment, ophthalmologists too often were confronted with recoveries that resulted in loss of vision for patients severely burned by caustics and acids. In considering the problem, as Dr. Kuhn has so aptly expressed it in an addendum to my report on sulfur metabolism,[1] "it is important to think in terms of major (i.e. chemical) eye burns, not simply exposures."

Frequent sequelae of these burns were vascularization and irreparable damage to the cornea. Much as I should like to forget these things, I now turn back to them as "control" evidence providing a method of comparison between the old therapy and the new.

Those who know Dr. Kuhn must recognize the authority with which she is entitled to speak when she states[1] that this therapy has made possible the saving of eyes that under any and all other forms of treatment would have been lost. In her clinic-hospital at Hammond, Indiana, Dr. Kuhn daily treats serious eye injuries.

Chemical Processes.—As Localio and his associates[5] pointed out, the infliction of a wound in a normal organism involves chemical processes of destruction and tissue synthesis. Among the factors listed as probably active in the processes of tissue healing are proteins, nucleotides, lipids, carbohydrates, crystalloids, oxygen, water, enzymes and catalysts. In cases of very severe burn injury the chemical processes involved in tissue synthesis may become impaired and healing will be delayed.

The apparent ability of hydrosulphosol to neutralize the effect (not the substance) of such chemicals on tissue must be based on the exertion of some chemical reaction on the tissues themselves. With the advances provided by research in chemotherapy and biochemistry this question of chemical reaction of tissues is being clarified. As Bellows observed,[6] "Although an occasional early reference may be found concerning the chemical composition of the lens, it has been only within the last generation that the fundamental nature of chemical processes in normal and deranged lens was realized."

Knowledge of the chemical reactions that take place in the body is general among physicians and surgeons, but it takes the reminder of a man like Du Vigneaud[7] to impress us with its importance. He has referred simply to the body as the best equipped chemical laboratory in the world. As he puts it, "every vital function within the body involves some chemical reaction. Biochemistry may well be considered as a science which seeks to explore the nature of the chemical compounds in living matter, to determine their origin and fate, and to elucidate the mechanisms of the chemical reactions in which they are involved. In working out these biochemical reactions, it is sometimes necessary to try to duplicate them in the laboratory. But . . . no chemical laboratory . . . no matter how elaborate its equipment, how extensive its research facilities . . . can duplicate all the chemical reactions that occur so smoothly within the normal, healthy human body."

Sulfur Metabolism.—In the case of the sulfhydryl compound, a working hypothesis involving sulfur metabolism has been adopted. There are many reports in the literature which are suggestive in this connection.

On the basis of the evidence presented by Patt and others[8] I offer as an example a type of burn which hydrosulphosol therapy has healed when all other medication failed. I refer to roentgen burns. Patt and his co-workers found that pretreatment of rats with cysteine markedly reduced toxicity from total-body roentgen irradiation in the nearly completely lethal range. This was true of the reducing agent cysteine, whereas the oxidized disulfide, cystine, was not effective.

Also bearing significantly on this situation is the report of Barron[9], who found that "sulfhydryl-containing enzymes are readily oxidized by radiation, and it is possible to reactivate such enzymes after moderate radiation doses (100-200 r) on addition of a reducing agent such as gluthathione."

The material with which I have been working contains a high concentration of sulfhydryl ion[10] and has marked reducing properties.

In consideration of the role played by sulfhydryl in tissue respiration and repair, one must think of glutathione. The literature abounds with references to its importance in the human economy, but authorities agree with Lipmann[11], who has stated "The function of glutathione is not yet well understood. It is present in practically every cell in fairly large amounts. Frequently it has been suggested that it performs the role of an oxidation-reduction buffer. The very complexity of intracellular metabolism prevents us from making more than vague statements of that type."

However, consideration of the function of this tripeptide may be somewhat narrowed. Elvehjem and his associates[12] referred to the active group in glutathione as the sulfhydryl radical of cysteine. The same workers also stated: "It is the sulphur group alone which is of importance in connection with tissue oxidations."

Glutathione contains a special chemical linkage of sulfur and hydrogen, known as the sulfhydryl group. It is the presence of certain substances, foremost of which is sulfhydryl, that produces the healing of wounds.

Application.—Direct information bearing on the absorption of sulfur in some form when hydrosulphosol has been applied topically to burns was furnished by Pierce[13]. Consequently, as Mellon[14] pointed out, "the opportunity is presented for a neutralization in the tissues of any oxidizing substances that may be formed by a burn. The known development of rising electrical potentials following the application of heat to the skin suggests their formation."

Kuhn referred to the report of Adams[15], which noted that there was a significant decrease in the lenticular glutathione content, due to the effect of heat. Whether the action of hydrosulphosol is to neutralize the deleterious effects of a burn or whether we are dealing with an elementary substance that may serve as a catalyst in complex reactions, the fact remains that under this method of treatment the response is decisive.

The speed with which hydrosulphosol stimulates healing is evidenced by Kuhn's report of a man aged 36 who sustained a chemical burn of the right eye, with denudation of areas of the cornea caused by caustic from drum fluid machines re ceived directly in the eye. Complete recovery was recorded within twenty-four hours after the accident, without impairment of vision.

Further evidence of the extraordinary ability of this sulfhydryl to produce healing is supplied by an old lye burn case reported by Kuhn. The patient, a man aged 51, had suffered a severe burn of the right eye involving the bulbar and lower lid conjunctiva, the lower half of the cornea having the appearance of being almost "cooked". This burn was caused by a strong lye solution deliberately thrown into the man's face from a can. There were burns about the face and neck as well as the eye. The patient did not reach Dr. Kuhn for treatment until eighteen days after injury, at which time hydrosulphosol therapy was instituted. The eye was extremely painful. The pain was relieved; epithelization began at once, and after nineteen days the eye was left open without medication. The iris, which had not been visible at first, could then be seen clearly. The lower fifth of the cornea cleared slowly, and after forty days the patient recovered with 20/40 vision. Dr. Kuhn reports that they were "pleasantly surprised" because it had not been expected that the eye itself could be saved.

I have observed similar results in scores of cases.

In a continuation of my original studies and actual use of hydrosulphosol, I have also tested its application in other conditions. I find that others who know the product have done the same. Although no formal report has been made,[*] it can be stated that hydrosulphosol has been used with success in treating corneal ulcers. (In connection with these different uses, it should be remembered that this is not an attempt to treat a number of conditions. The problem involved in each case is the healing of tissue.)

Approach to this problem of tissue healing is aided by the fact that the sulfhydryl I have used is available in several forms, i.e., as an aqueous solution, for oral use, in a water-soluble base, in an ointment and in the castor oil preparation first used and reported by Kuhn.

In adapting this medicament to the practice of ophthalmology, advantage was taken of information made available after its successful use for serious burns on other parts of the body. Since then my interest has been centered on the problem of exploring fully the chemical processes involved. As a result, I have been led into a new field of possible value in ophthalmology. I refer to diabetes.

Diabetic Complications.—In the brilliant work presented by Joslin, Root, White, Marble and Bailey[16] on the treatment of diabetes mellitus, Root stated: "The ocular complications in diabetes are frequent, distressing and present a challenging problem." My interest in exploring this field is based on the fact that sulfur comprises one of the important constituents of the insulin molecule. Joslin and his coworkers stated that all of the sulfur, 3.2 per cent, in insulin is present as the disulfide linkage. However, they also pointed out that "Abel and his co-workers noted a definite relationship between physiological activity and the so-called labile sulfur." The lability of the sulfur present in hydrosulphosol is one of its characteristics.

The possible value of hydrosulphosol as an aid to the treatment of impaired vision suffered by diabetic patients or persons in the early stages of cataract is now being explored. There is evidence of favorable response to both topical and oral administration, but the study is far too new to permit conclusions.

Supporting the indication that a chemical compound of this nature should be of value in treating diabetic complications is the history of a case illustrating the ability of hydrosulphosol to bring about healing in one of the most difficult conditions encountered in medicine. The case was not directly related to ophthalmology but involved one of the most severe types of diabetic infectious gangrene[17]. The patient, a man 62 years of age, had a badly infected left foot with diabetic gangrenous lesions that were exuding a blue-black ichor from five draining sinuses. There were four separate openings in the sole of the foot and a perforating type of ulcer on the top of the foot posteriorly, from approximately the middle toe. The ankle and foot were considerably swollen, and discoloration extended upward to a point just above the knee.

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[*] Since this article was written, a report of the use of sulfhydryl in the treatment of corneal scars following chemical eye burns and ulcers has been published (*Industrial* [illegible] [illegible]), July-August 1950)

The patient had refused amputation, which had been recommended as the only available treatment. The doctor who was called in and who supplied this report had himself used hydrosulphosol to heal ulcers on his hands due to cold roentgen burns, thus preventing threatened amputation of both his own hands.

He resorted to the very simple procedure of adding the hydrosulphosol solution to soaks twice a day for thirty minutes each time, plus wet compresses saturated with full strength solution and applied directly on the ulcers. A favorable response was quickly manifested. There was first a decrease in pain, followed by relief from the uncomfortable restrictions imposed by the condition. One change noted very early was the disappearance of an objectionable odor.

Within three weeks there was a marked decrease in the swelling of the leg, and the patient was able to resume limited activity. During the next few weeks the improvement was so rapid that by the end of three months healing was complete. By this time all the openings had filled in to a normal level, with no contractures and only mild scarring. There was no recurrence of this condition and no breakdown during the following six years, after which the patient died of other causes.

Reinforcing this case are the results observed recently in treating severe diabetic ulcers by Coffey and Barnes.[20] In each of 2 cases the patient was facing amputation of a foot. The final results produced by hydrosulphosol therapy closely paralleled those just reported. Pain and discomfort were relieved promptly. Healing was rapid, being complete in slightly less than three months, and both patients recovered, with complete filling in of tissue. The original lesions were deep, with the characteristic foul necrotic base.

Informal reports from others refer to body burns in diabetic patients which had refused to heal but were quickly healed upon institution of hydrosulphosol therapy. This is deemed significant, because thermal injury to the skin and underlying tissues may have grave consequences in a diabetic person.

Behavior of Alloxan with Hydrosulphosol.—Reference has been made[3] to the work of Sullivan, who reported on experiments with hydrosulphosol to protect animals from the convulsive effect of alloxan. as a control procedure BAL was used because it is a strong reducing agent and contains sulfhydryl.

It is well established that diabetes can be produced experimentally in animals by intravenous or subcutaneous injection of alloxan. Following the evidence produced by earlier workers, Sullivan found that BAL is capable of protecting animals from fatal convulsions produced in control animals after injection of alloxan.

Although, as Sullivan pointed out, "the mechanism of alloxan diabetes is not fully elucidated," it has been found by Dunn and his associates[15] that the death of animals on injection of alloxan is due to the selective necrosis of the beta cells in the islets of Langerhans.

In comparable tests Sullivan[19] noted that hydrosulphosol functions also to offset the convulsive effect of alloxan. Because of the import of these experiments, the original tests were repeated to rule out error, and the result has been to demonstrate the superiority of hydrosulphosol. It is suggested that the possible explanation for this may rest on the fact that BAL is known to be toxic, while hydrosulphosol, when used in all the ways recommended for man, has not exhibited toxicity.

In the animal experiments Sullivan injected the hydrosulphosol, a method of administration that it is not recommended for man. But Sullivan found that even after injection of 0.11 cc. of hydrosulphosol the animals did not display toxic reactions. This amount, 11 cc., however, was found ample to protect the animals from fatal convulsions following injection of alloxan.

COMMENT

The fact that animal experimentation to test the wound-healing action of sulfhydryl has not produced positive results should not be a bar to its recognition as a valuable form of therapy.

Sufficient animal experimentation has been done to confirm the fact that sulfhydryl, as it is contained in the product I have been using, is completely safe to use. But far more important is the fact that this method of treatment has been used routinely by a large number of ophthalmologists in cases numbering into the thousands over a period of more than eight years.

The controls relied upon to provide comparison are case histories of as nearly similar type and extent of injury as possible, covering patients treated with previously available methods. One experienced in treating serious eye burns will have no difficulty in recognizing the superiority of this treatment.

I consider myself justified in suggesting that, with this sulfhydryl available, it is possible that we should revise our concepts of the accepted procedure in the handling of injury to tissues. Antiseptic agents known to be toxic have been applied to wounds to prevent infection which would tend to delay healing. The value of such agents is dependent on the minimum degree of toxic effect which they themselves produce.

In this sulfhydryl we have an agent that has been proved to possess chemical properties that have a favorable influence on the healing of injured tissue. Clinical responses provide corroborative evidence. Particularly is this true in the treatment of the most serious ophthalmic burns produced by chemical and thermal agents.

SUMMARY AND CONCLUSIONS

Sulfhydryl, as it is contained in the products that are identified by the trademark "Hydrosulphosol", has proved to be an effective treatment for the most serious eye burns. It is a nontoxic chemotherapeutic agent.

Study of its value is recommended in connection with the treatment of many types of infection and injury to tissue, such as are involved in corneal ulcer and ocular complications due to diabetes.

The success with which this treatment can be employed is enhanced by the speed with which it can be applied. Traumatic ophthalmology demands the utmost in skill and the availability for immediate use of the best medication obtainable. In the absence of similar products hydrosulphosol is recommended as the medicament of choice.

The critical and dangerous period in treating serious eye burns occurs within the first twenty-four to forty-eight hours. Frequently irreparable damage is done unless the corrosive Effects of such agents as strong alkalis are not neutralized in the very first treatment.

Emphasizing the extraordinary capacity of this product to heal tissue is its action in one of the most severe types of infection, diabetic gangrene.

RÉSUMÉ ET CONCLUSIONS

Les brûlures de l'oeil sont traitées avec succès par le Sulphydryl, dans le commerce sous le nom de Hydrosulphosol.

Sans effet toxique, on le recommande, dans divers types d'infections et de lésions oculaires, v.g. ulcère de la cornée et complications oculaires du diabète.

Son succès thérapeutique dépend de la diligence apportée dans le traitement. L'ophtalmologie traumatique demande de l'habilité et de la diligence; doù la nécessité de bons produits tel l'Hydrosulphosol.

Les 24 ou premières 48 heures est la période d'urgence. Si on ne neutralise pas

immédiatement les brûlures par agents caustiques, il peut s'ensuivre des dégats irréparables. On ne savait trop louer le pouvoir de cicatrisation de ce produit.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

Sulfhydryl, das in den unter dem Handelsnamen Hydrosulphosol erscheinenden Praeparaten enthalten ist, hat sich in der *Behandlung schwerster Augenverbrennungen* als wirksam gezeigt.

Est ist ein ungiftiges chemotherapeutisches Mittel. Es wird empfohlen, seinen Wert in der Behandlung vieler Formen von Gewebsinfektionen und —verletzungen, wie sie beim Hornhautgeschwuer und bei Augen komplikationen des Diabetes vorkommen, zu pruefen.

Die Erfolgsaussichten der Behandlung werden durch ihre rasche Anwendbarkeit noch erhoeht. Die erfolgreiche Behandlung von Augenverletzungen setzt sowohl groesste Erfahrung als die unmittelbare Verfuegbarkeit bester Medikamente voraus. Wenn solche nicht vorhanden sind, wird Hydrosulphosol als das Mittel der Wahl empfohlen.

Bei der Behandlung schwerer Apgenverbrennungen sind die ersten 24 bis 48 Stunden *die kritische und gefaehrlichste* Zeitspanne. Haeufig entsteht irreparabler Schaden, wenn die zerfressenden Eigenschaften etwa einer starken Lauge nicht bei der allerersten Behandlung neutralisiert werden.

Die ungewoehnliche Faehigkeit dieses Praeparats, Gewebe zur Heilung zu bringen, tritt besonders bei einer der schwersten Formen der Infektion, naemlich bei der diabetischen Gangraen in Erscheinung.

RESUMEN Y CONCLUSIONES

Sulfhydryl, tal como lo contienen los productos Hydrosulphosol, ha probado ser un tratamiento efectivo en las más serias quemaduras oculares.

Se trata de un agente quimioterápico no tóxico.

Se recomienda el estudio de su eficacia en relación con el tratamiento de muchos tipos de infección y lesión tisular, como la úlcera corneal y las complicaciones oculares debidas a la diabetes.

El éxito con el que este tratamiento puede ser empleado aumenta con la rapidez con que puede ser aplicado. La oftalmología traumática requiere la máxima habilidad y obtención para uso inmediato de la mejor medicación disponible. *Se recomienda Hydrosulphosol* como método de elección al no disponerse de productos similares.

El período crítico y peligroso para el tratamiento de quemaduras oculares serias es de las primeras 24 a las 48 horas. Ocurre frecuentemente daño irreparable, debido a los efectos corrosivos de agentes como los álcalis fuertes, que no son neutralizadòs en el primer tratamiento.

Se señala la extraordinaria capacidad de este producto para la cicatrización tisular, aun en tipos muy severos de infección como la gangrena diabética.

RIASSUNTO E CONCLUSIONI

Il sulfidrile, quale é contenuto nei prodotti che vanno sotto il nome commerciale di Hydrosulphosol, si é dimostrato efficace *nel trattamento delle più serie ustioni* oculari. E' un chemioterapico non tossico. Si dimostra di particolare valore nel trattamento di vari tipi d'infezione oculare e lesioni ulcerative corneali legate alle complicazioni diabetiche. Il successo di questo trattamento é in dipendenza della tempestività con la quale esso può essere applicato. L'oftalmologia traumatica esige il massimo di abilità e immediata disponibilità della migliore medicazione. In assenza di prodotti similari Hydrosulphosol é raccomandato quale metodo di scelta.

Il pericolo critico e rischioso nel trattamento delle serie ustioni oculari occorre fra le prime 24 e 48 ore. Spesso il danno é irreparabile, a meno che gli effetti corrosivi di agenti quali i forti alcali, non vengano neutralizzati nella primissima medicazione.

E' degno di nota la straordinaria capacità di questo prodotto nel cicatrizzare i tessuti in uno dei più severi tipi d'infezione cioé nella gangrena diabetica.

SUMÁRIO E CONCLUSÒES

O sulfhydryl, tal como é contido nos produtos que são identificados pela marca registrada "hydrosulphosol" tem provado ser um tratamento efetivo para as mais sérias queimaduras dos olhos. E' um agente terapeutico não tóxico.

O estúdo de suas propriedades é recomendado em conexão com o tratamento de muitos tipos de infecção e trauma dos tecidos, tais como aqueles que são envolvidos na ulcera da córnea e nas complicações oculares do diabétes. O sucesso com que este tratamento póde ser empregado é favorecido pela velocidade com a qual póde ser aplicado. A traumatologia oftalmológica requér a maior habilidade e o ter á mão para pronto uso a melhor medicação existente. Na ausencia de produto similar o hydrosulphosol é recomendado como método de escôlha.

O periodo critico e perigôso no tratamento das queimaduras graves dos olhos ocórre dentro das primeirias 24 ou 48 primeiras horas. Frequentemente dano irreparavel se produz á menos que os efeitos corrósivos de tais agentes como os alkalis fórtes não sejam neutralizados precocemente no primeiro socôrro.

A extraordinaria capacidade deste produtto na reparação dos secidos é revelada na sua ação benefica em um dos mais sevéros tipos de infeção, como seja o da gangrena diabética.

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Hysterectomies in Private Practice

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MUCH of the current literature[1] on the subject of hysterectomy suggests increasing safety for the operation, as indicated by lower morbidity and mortality rates, broadened indications for the procedure and a marked trend toward a total operation, either by the abdominal or by the vaginal approach. Furthermore, the substantiating arguments and statistics are most convincing. It is natural and proper that the majority of the reports originate from teaching centers, and the question arises as to the degree to which changes have manifested themselves in private practice in the average community.

To this end, the records of all patients subjected to hysterectomy in St. Joseph Hospital (an approved 160-bed hospital with a full time pathologist) for a period of five years, 1945 through 1949, have been personally reviewed in an effort to determine whether the procedure has been abused and to consider the indications, types of operation and results in the light of present-day standards.

In all, 801 hysterectomies were performed during this period by 42 surgeons from the general surgical, gynecologic and general practice sections of the staff. Table 1 shows the number and type of operations by year.

The sulfonamides and antibiotics, together with improved preoperative and postoperative management, appear to have made the safety of the total procedure comparable with that of the subtotal. Furthermore, objections to the total hysterectomy because of shortening of the vagina or less adequate support of the vault are not valid if the operation is properly performed. Castallo and Wainer[2] have recently measured the depth of the vagina before and after hysterectomy in a fairly large number of cases, and have found an actual lengthening after hysterectomy, more so after total than after subtotal hysterectomy.

If, then, the objections are more theoretical than real, removal of the cervix at the time of hysterectomy would seem not only desirable but actually indicated for those cases in which technical difficulties are not encountered, and when the experience of the surgeon and the condition of the patient are favorable. In this manner, not only can the possibility of future cervical malignant disease be eliminated, but the troublesome symptoms of pelvic pain, discharge, backache, dyspareunia, etc., which may result from chronic cervical disease, can also be eliminated.

At this point it should be mentioned that 83 per cent of the cervices removed with the uterus in this series were sufficiently diseased to be included in the pathologic report. At the same time, the records of 56 per cent of the patients subjected to subtotal hysterectomy mentioned, in the history or the physical examination, some disease of the cervix (the actual percentage is no doubt higher, since not all of the records could be considered absolutely complete). Management of these cases of cervical disease, when a subtotal operation was done, varied from no treatment of the cervix in many to a few in which a Sturmdorf amputation was performed prior to the subtotal operation abdominally. In the interval, cauterization of the cervix was commonly noted, and conization was used occasionally. The idea suggests itself that the interest of many of these patients might best have been served by complete removal of the diseased cervix. It is encouraging, therefore, that during 1949 there was a substantial increase in the percentage of total operations at this hospital, both abdomi-

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TABLE 1.—*Number and Type of Hysterectomies by Year*

Year	Total Number	Subtotal	Total	Vaginal
1945	155	119 (77%)	25 (16%)	11 (7%)
1946	201	163 (81%)	23 (11.5%)	15 (7.5%)
1947	168	122 (72.6%)	37 (22%)	9 (5.4%)
1948	138	110 (79.8%)	22 (15.9%)	6 (4.3%)
1949	139	77 (55.4%)	46 (33.1%)	16 (11.5%)
Total	801	591 (73.8%)	153 (17.8%)	57 (8.4%)

TABLE 2.—*Hysterectomies According to Age Groups*

Age	21-30	31-40	41-50	51-60	61-70	70+
Number and Per Cent	56 (7%)	233 (29%)	346 (43.2%)	119 (14.8%)	35 (4.4%)	12 (1.6%)

TABLE 3.—*Morbidity by Year and Amount for Each Type of Operation*

Year	Number of Hysterectomies		Morbidity			
			Slight	Moderate	Severe	Total
1945	Subtotal	119	22	12	3	37
	Total	25	4	4		8
	Vaginal	11	2	4		6
1946	Subtotal	163	38	14	2	54
	Total	23	5	3		8
	Vaginal	15	3	3	1	7
1947	Subtotal	122	18	10	2	30
	Total	37	6	6	1	13
	Vaginal	9	2			2
1948	Subtotal	110	14	4	1	19
	Total	22	1	2		3
	Vaginal	6	1	1		2
1949	Subtotal	77	2	4		6
	Total	46	6	3	1	10
	Vaginal	16	1	2		3
Total operations	Subtotal	591	94	44	8	146 (24.7%)
	Total	153	22	18	2	42 (27.2%)
	Vaginal	57	9	10	1	20 (35%)
	All	801	125	72	11	208 (25.9%)

nal and vaginal.

Table 2 lists the number of hysterectomies per year according to age. It is not remarkable, and, as would be expected, the majority fall in the fourth and fifth decades.

In Table 3 an attempt is made to show the morbidity by degree for each type of operation. When a temperature of 100.4 F. was exceeded on any two days after the first twenty-four hours, frequently without demonstrable cause, it was classified as slight involvement; for three or four days it was classified as moderate, and when five or more days were febrile or when the reaction was alarming for a shorter period, it was recorded as severe.

The majority of the morbid cases are in the "slight" classification. The patient offered little or no complaint, and usually no reason for the elevated temperature was recorded. In the moderate and severe groups the causes followed the expected pattern. Wound infections and localized abscesses predominated, but ileus, cystitis and/or pyelitis, bronchitis and/or pneumonitis, thrombophlebitis, atelectasis and, in 1 case, diarrhea were noted. Although it was not a primary cause of morbidity, it is of interest to note that there was a postoperative abdominal hemorrhage once, and ureteral damage was encountered once in connection with a radical operation for a malignant lesion. The overall morbidity rate of 25.9 per cent compares most favorably with other reports.[3]

The mortality rate in this series was quite low (0.37 per cent) in spite of the fact that all cases are considered, including abdominoperineal resections and other radical cancer operations. There were 3 deaths. One patient, 66 years old, collapsed suddenly on the day after the operation, apparently from embolism. Another, 76 years old, died on the twenty-seventh postoperative day after persistent ileus. The third was a 24-year-old woman who was subjected to hysterectomy as an emergency procedure because of persistent uterine atony and hemorrhage following parturition. In spite of the excellent management this patient received, her condition was extreme at the time of operation and she failed to rally afterward. Autopsy also revealed bilateral lung collapse. All 3 of these deaths followed a subtotal procedure, which is not considered significant.

The marked preference for spinal anesthesia has been somewhat surprising. It was used as the basic anesthesia in 744 cases (94 per cent), but was supplemented frequently by pentothal or gas-ether. Gas and/or ether was used primarily in 35 cases, and pentothal was the only anesthetic agent for 20 patients. Local infiltration was used once, in the case listed above as the third death. No serious reactions to the anesthesia were noted in the records of these patients.

The number of postoperative hospital days varied from three to forty; the average was nine and five-tenths. The longer hospitalizations were, of course, necessitated by complications, particularly thrombophlebitis. The 3 patients who died are not included in these figures. Each year the hospital stay has shown some decrease, no doubt as the result of a tendency toward earlier ambulation.

To tabulate accurately all symptoms of which these patients complained does not seem feasible or even important, as many appear unrelated to uterine or pelvic pathologic change. However, the predominant symptom as recorded in the histories has been noted for each case. It must be emphasized that the majority of patients had multiple symptoms, and in some instances it was difficult to determine which predominated. Of course, menometrorrhagia and pain in one form or another were present in the great majority. The incidence of these and other symptoms as the chief complaint is summarized in Table 4.

Objectively, the most reliable justification for removal of any organ is provided by the pathologic report. In many instances it is the sole justification. For removal of the uterus, however, other considerations are, at times, of even greater importance, such as symptoms, ability to bear children, age and psychologic factors. Furthermore, the hospital records rarely depict the patient as a whole, and factors known only to the attending physician may influence the decision. However, some tangible basis for the operation must be used from a statistical viewpoint, and with this in mind, realizing the obvious limitations, the records were minutely and impersonally examined in a sincere effort to determine whether the pathologic and/or symptomatologic evidence might appear sufficient.

Four categories were considered. The first was the group in which the preoper-

TABLE 4.—*Predominant Symptom in Each Case*

Bleeding	356
Pain and/or pressure	319
Relaxation and/or prolapse	43
Abdominal tumor	16
Vaginal discharge	17
Incontinence	9
Retention of urine	2
Ankle edema	1
Epileptic seizures with menses	1
Cesarean section with complications	8
Postradiation for malignancy	9
None	20

TABLE 5.—*Summary of Justified and Unjustified Hysterectomies*

Year	Total Number	Preoperative Diagnosis Confirmed	Preoperative Diagnosis Not Confirmed, but Operation Justified	Not Justified	Contraindicated
1945	155	92	42	17	4
1946	201	117	44	38	2
1947	168	109	38	19	2
1948	138	93	30	11	4
1949	139	98	30	7	4
Total	801	509 (63.6%)	184 (23%)	92 (11.5%)	16 (1.9%)

TABLE 6.—*Relation of Hysterectomies to Total Admissions and Total Major Operations*

Year	Total Admissions	Total Major Operations	Hysterectomies	Per cent of Total	Per cent of Major Operations
1945	5114	1321	155	3.0	11.0
1946	5549	1640	201	3.6	12.2
1947	5423	1450	168	3.1	11.6
1948	5403	1588	138	2.5	8.0
1949	6321	1832	139	2.2	7.6

ative diagnosis was verified and considered adequate. In the second group were included those cases in which the pathologic and/or postoperative observations differed from the preoperative diagnosis, but the pathologic picture seemed sufficient to justify hysterectomy. Third, there were some patients who apparently lost a uterus without adequate reason by the aforementioned standards, and the fourth group includes the patients for whom the operation was not only not justified but contraindicated. These are tabulated in Table 5.

To analyze all cases at this time is, of course, impractical. The first two groups need no particular comment, and the third group is based mainly on minimal or absent pathologic change, and occasionally age is considered in connection with other factors. Typical examples of this category are outlined as follows:

CASE 1.—A 31-year-old woman complained chiefly of pelvic pain. The preoperative diagnosis was chronic pelvic inflammatory disease. A subtotal hysterectomy was done, the tubes and ovaries being left. The pathologist reported no abnormality in the removed uterus.

CASE 2.—A patient 49 years of age had a history of bleeding. The preoperative diagnosis was fibroids. The pathologic report revealed no abnormality except endometrial polyposis, and it is likely that a dilatation and curettage and/or other conservative treatment might have been sufficient.

CASE 3.—A 48-year-old woman complained of pelvic pain. A cervix suspected to be "precancerous" was proven benign by biopsy. A subtotal hysterectomy was performed, with no treatment of the cervix recorded and no abnormality observed by the pathologist.

CASE 4.—A patient aged 23 years had persistent menorrhagia. After hysterectomy the pathologist reported only endometrial polyps. This operation was included with the ones not justified because of age and minimal pathologic change. Actually, however, the patient had had extensive conservative treatment, including five curettements.

The fourth group demands closer consideration, for herein lies the most urgent need for improvement. Four of these 16 uteri contained an intrauterine pregnancy, and the removal was, without doubt, an honest error. Three of the 4 were early pregnancies masked by fibroids. Although not offered as an excuse, this figure, incidentally, appears quite favorable. In a similar review Collins[3b] reported 6 hysterectomies in 354 in which pregnancy was found, 2 with fibroids and 4 with normal pregnancies. The remaining 12 fall into a common group and are summarized as follows:

CASE 1.—A 57-year-old woman complained of recurrent irregular bleeding. Her condition was diagnosed as probable carcinoma of the fundus. Curettage confirmed the diagnosis and was followed immediately by vaginal hysterectomy.

CASE 2.—A 56-year-old patient had recurrent irregular bleeding. The diagnosis was fibromyomas. Total hysterectomy was done, with a pathologic diagnosis of adenocarcinoma of the fundus and no fibroids.

CASE 3.—A 69-year-old patient had a vaginal discharge and irregular bleeding. Her condition was diagnosed as possible carcinoma of the fundus. Subtotal hysterectomy was done, the tubes and ovaries being left. The final diagnosis was carcinoma of the fundus.

CASE 4.—A 53-year-old patient had recurrent irregular bleeding. The diagnosis was fibroids. Subtotal hysterectomy was done, the tubes and ovaries being left. The final diagnosis was adenocarcinoma of the upper part of the cervix; no fibroids.

CASE 5.—A 64-year-old patient complained of bleeding. The diagnosis was probable malignant disease. Curettage proved this and was followed immediately by vaginal hysterectomy. The wall of the uterus was invaded, and removal was difficult.

CASE 6.—A 73-year-old patient complained of bleeding. The diagnosis was carcinoma of the uterus, confirmed at operation by frozen section. Subtotal hysterectomy was done, the tubes and ovaries being left.

CASE 7.—A 64-year-old patient complained of bleeding. The diagnosis was fibroid. Total hysterectomy was done, with a postoperative diagnosis of carcinoma of the fundus; no fibroid.

CASE 8.—A 79-year-old woman complained of bleeding. The diagnosis was fibroid. A total hysterectomy was done, with a postoperative diagnosis of carcinoma of the fundus in addition to fibroids.

CASE 9.—A 69-year-old patient complained of bleeding. The diagnosis was "pelvic tumor." A subtotal hysterectomy was done, the tubes and ovaries being left, with a postoperative diagnosis of carcinoma of the fundus.

CASE 10.—A 63-year-old woman complained of a vaginal discharge. Her condition was diagnosed as pyometria. A total hysterectomy was done, with a pathologic diagnosis of carcinoma of the fundus.

CASE 11.—A 76-year-old woman complained of bleeding. The diagnosis was "fibroid." A subtotal hysterectomy was done, with a pathologic diagnosis of sarcoma.

CASE 12.—A 53-year-old patient complained of pelvic pain. The diagnosis was "possible pelvic malignancy." A total hysterectomy was done, with a pathologic diagnosis of carcinoma of the cervix.

All of these patients had symptoms suggestive of malignant lesions, especially when their ages are considered. Some were actually admitted with the diagnosis of suspected malignant disease. However, the records do not indicate that any attempt at accurate diagnosis was made preoperatively, either by diagnostic curettage or even by cytologic studies, in the majority of cases (9). In 3 the diagnosis was definitely established, but the choice of treatment appears questionable. Although a primary surgical approach in the treatment of uterine and/or cervical cancer is at times feasible, there is nothing to suggest that these patients might fall in that category, and it is concluded that their best interests would have been served by preoperative radium and/or roentgen therapy. If primary surgical intervention might have been indicated, a more radical technic than the ones described appears to be mandatory.

Consideration of these 12 cases, and the fact that confirmation of the preoperative diagnosis occurred in only 63.6 per cent of the total, would suggest that many patients are being inadequately studied. Not only could this figure be improved, but the 13.4 per cent of hysterectomies considered unjustified might be substantially reduced.

That a tabulation of this kind may not present a true picture is readily admitted, especially when individual cases are considered. For example, a woman with menorrhagia may be subjected to hysterectomy for fibroids. Examination of the removed uterus reveals a subserous tumor 1 or 2 cm. in diameter, which confirms the preoperative diagnosis but does not logically account for the menorrhagia. A hysterectomy performed in a case of this type, then, would be more properly placed in the unjustified group, because adequate hormone or other conservative therapy might easily have relieved the patient's complaint and made the operation unnecessary.

On the other hand, uteri which show little or no pathologic change may be justifiably removed to relieve a symptom complex which has not responded to adequate study and conservative treatment.

For instance, persistent functional bleeding may sometimes necessitate hysterectomy, as mentioned in one of the examples given earlier, when the basic abnormality may be in the pituitary gland or elsewhere. In this category, also, should be mentioned an unfortunate group of women who present the picture Taylor[4] calls "congestion-fibrosis syndrome," characterized by multiple complaints in varying degrees, such as low backache, pelvic pain and soreness, dyspareunia, endocervicitis, menstrual disorders, etc., and based on pelvic circulatory congestion and the resulting fibrosis. Such women have a tendency to go from one doctor to another because many do not easily obtain complete or permanent relief from conservative procedures and in desperation "try someone else." They are frequently classed as neurotic, but it may well be that they are neurotic because they are continuously uncomfortable rather than uncomfortable on a psychogenic basis. Unfortunately, many of these women are relatively young, and for that and other reasons there is a tendency to deny them the relief offered by adequate pelvic surgical treatment, including, at times, hysterectomy. This tendency to conservatism is a commendable one and should be encouraged, but it can be carried too far. If a thorough study and a sincere trial of simpler measures fail to restore a woman to a useful and comfortable life, she is entitled to more radical intervention, although she may be considerably short of the menopause.

It is apparently true that the ovaries undergo certain slowly developing changes after removal of the uterus, including an increase of interstitial cells and the frequent occurrence of follicular cysts and follicular atresia. However, it would appear that these ovaries continue to function, although their activity may be modified. At any rate, the changes, if any, are slow in their development, and conservative opinion of today[5] does not consider this a major factor in the problem of hysterectomy.

The relation of hysterectomies to total hospital admissions and total major operations by year may be found in Table 6.

No similar tabulation has been found in a review of the literature, and consequently a comparison of these percentages is not possible. However, it is of interest to note the lower ratio during the last two years, in spite of broadened indications, but the reason or reasons for this drop are a matter for conjecture. New drugs and a better understanding of female endocrinology coupled with more potent hormone preparations may logically be important factors. It is also noteworthy that this drop coincides with the rule at this hospital requiring consultation for all hysterectomy patients under 45 years of age. Discussion of this matter with members of the consultation committee, however, reveals that relatively few proposed hysterectomies are considered to be not indicated; therefore, this factor is open to question. However, the rule might be a deterring factor by encouraging a closer screening of borderline cases before admission for hysterectomy.

The actual role of the consultant is a difficult one, although the objective is excellent. In cases of obvious and adequate pathologic change, consultation is useless. In those with less definite indications, the consultant has inadequate opportunity for study of the patient as a whole. As has been brought out, hysterectomy may not be necessary even when a definite palpable pathologic condition is present, and at other times it may be the only solution in spite of the lack of objective data resulting from one examination. Nevertheless, whatever the reasons may be, this lowering hysterectomy rate is encouraging.

SUMMARY AND CONCLUSIONS

1. The records of 801 consecutive patients subjected to hysterectomy over a five-year period are reviewed.
2. The increasing acceptance of a total operation as the procedure of choice is now becoming manifest at this hospital, as indicated by the percentages recorded.
3. The age groups for which this operation was done follow quite closely the national pattern, and, as would be expected, the majority of the patients are in the fourth and fifth decades.
4. The morbidity and mortality rates encountered are relatively low as compared with those in other reports.
5. Spinal anesthesia has been chosen for 94 per cent of the patients, a surprisingly high figure.
6. The postoperative hospitalization period is being lessened year by year.
7. There are indications that more thorough study might result in greater accuracy of preoperative diagnoses and at the same time reduce the number of unjustified operations. However, when compared to other similar reports, it would appear that hysterectomy is not an abused operation at this hospital.
8. The management of malignant lesions of the uterus and cervix, from both diagnostic and therapeutic viewpoints, is considered inadequate in a large number of cases.
9. The pathologic report should not be considered the sole justification for hysterectomy. Removal of a uterus is occasionally necessary on a symptomatic basis.
10. The recent reduction in the number of hysterectomies, when compared with total hospital admissions and total major operations, is a commendable trend.

RÉSUMÉ ET CONCLUSIONS

1. L'auteur passe en revue les dossiers de 801 cas opérés pour hystérectomie dans les cinq ans.
2. La totale est, de l'avis du plus grand nombre, l'opération de choix dans cet hôpital, si l'on se base sur le pourcentage des dossiers.
3. L'âge des patients est superposable à celui rencontré un peu partout ailleurs; le plus grand nombre, comme cela doit se trouver, se rencontre dans la quarantaine et la cinquantaine.
4. Le taux de mortalité est plus bas, et celui du séjour hospitalier est plus court si on le compare avec d'autres.
5. Même si cela semble élevé, la rachianesthésie a été employée dans 94% des cas.
6. Annuellement on a baissé la durée de l'hospitalisation.
7. Une étude plus approfondie des cas amènerait un diagnostic plus précis et conséquemment moins d'interventions inutiles. Si l'on compare cependant nos statistiques avec celles d'ailleurs, il n'y a pasplus d'abus dans notre hôpital qu'ailleurs.
8. A notre avis, il n'y a pas suffisamment d'attention, tant du point de vue du diagnostic que du point de vue thérapeutique dans l'examen de cas de malignité intéressant et le corps et le col utérin.
9. On ne doit pas se baser uniquement sur l'examen anatomo-pathologique pour justifier une hystérectomie; quelquefois, la symptomatologie est aussi essentielle.
10. Une diminution notoire du nombre des hystérectomies existe actuellement si on compare le nombre des hospitalisés et le nombre de toutes les interventions majeures.

RESUMEN Y CONCLUSIONES

1. Se revisan los expedientes de 801 pacientes consecutivas operadas de histerectomía en un período de 5 años.
2. La aceptación creciente de la histerectomía total se pone de manifiesto en este hospital, como resultado del porcentaje registrado.
3. La edad en los grupos de operadas sigue muy de cerca la del patrón nacional, encontrándose por consiguiente la mayoría en la cuarta y quinta décadas.
4. Los índices de morbilidad y mortalidad son relativamente bajos en comparación con los de otras comunicaciones.
5. La raquianalgesia ha sido escogida

por el 94% de las pacientes, cifra sorprendentemente alta.

6. La hospitalización postoperatoria ha disminuido de año en año.

7. Con el estudio más cuidadoso resulta mayor exactitud en los diagnósticos preoperatorios, reduciéndose al propio tiempo las operaciones injustificadas. Sin embargo, comparando con otras comunicaciones similares, parece que no se abusa de la histerectomía en este hospital.

8. Se considera inadecuado en gran número de pacientes el tratamiento de cánceres uterinos y cervicales, tanto desde el punto de vista diagnóstico como terapéutico.

9. No debe considerarse el informe patológico como la sola justificación de la histerectomía. La histerectomía es ocasionalmente necesaria sobre una base sintomática.

10. La reciente reducción en el número de histerectomías, en comparación con la totalidad de los ingresos al hospital y la totalidad de las operaciones de cirugía mayor, es una orientación recomendable.

RIASSUNTO E CONCLUSIONI

1. I registri di 80I pazienti consecutivi sommesso ad isterectomia al di la' di un periodo di cinque anni furono rivisti.

2. L'accoglienza aumentando dell'operazione totale come la procedura di scelta viene evidente dal per cento registrato.

3. L'età in gruppi nei quali quest'operazione fu fatta segue strettamente il modello nazionale, e, come si aspettava, la maggioranza nella quarta e quinta decadi.

4. I ranghi di morbidita' e mortalita' scontrati sono relativamente basso a confronto ad altri rapporti.

5. Anestesia spinale fu scalta per 94% dei pazienti, un numero sorpentendemente alto.

6. Ospedalesazione postoperatorio viene diminuito ogni anno.

7. Vi sono indicazioni che piu perfetto studo puo' risultare in esattezza della diagnosi preoperativa, e, al medesimo tempo, ridurre operazioni non giustificato. Tutta via, quando si confronta ad altri simile rapporti, apparirebbe che isterectomia non e' un operazione abusata in quest'ospedale.

8. Il conducimento di malignita' del utero e del collo, dal punto di vista diagnostico e terapeutico, e' considerato insufficente in un largo numero di pazienti.

9. Il raporto patologico non dovrebbe essere considerato l'unica giustificazione per isterectomia. Rimovimento del utero e' occasionalmente necessario sulla base sintomatica.

10. La recente riduzione nel numero di isterectomie, quando a pargone coll'ammissioni totali del ospedale ed operazioni maggiori, e' un corso commendabile.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

1. Es werden die Krankheitsgeschichten einer ununterbrochenen Serie von 801 Kranken, die innerhalb von fuenf Jahren einer Gebaermutterresektion unterzogen wurden, untersucht.

2. Die wachsende Anerkennung der Radikaloperation als Methode der Wahl kommt jetzt in diesem Krankenhaus zutage und drueckt sich in den verzeichneten Prozentziffern aus.

3. Die Altersgruppen, an denen die Operation ausgefuehrt wurde, entsprechen ziemlich genau den Beobachtungen, die im ganzen Lande gemacht worden sind; wie zu erwarten, handelt es sich in der Mehrzahl um Kranke im vierten und fuenften Lebensjahrzehnt.

4. Die Morbiditaets- und Sterblichkeitsziffern sind, verglichen mit anderen Berichten, verhaeltnismaessig niedrig.

5. An einer ueberraschend hohen Zahl von Kranken, naemlich in 94%, wurde als Narkose die Spinalanaesthesie angewandt.

6. Die Dauer des Krankenhausaufenthalts nach der Operation verringert sich von Jahr zu Jahr.

7. Es liegen Anzeichen vor, die darauf hinweisen, dass durch sorgfaeltigere Untersuchungen eine genauere praeoperative Diagnose gestellt werden und damit die Anzahl unberechtigter Operationen zum Sinken gebracht werden kann. Verglichen mit anderen aehnlichen Berichten wird offen bar in diesem Hospital die Gebaer-

mutterresektion nicht missbraucht.

8. Die Handhabung boesartiger Erkrankungen der Gebaermutter und des Gebaermutterhalses sowohl in diagnostischer als auch in therapeutischer Hinsicht wird in einer grossen Anzahl der Faelle als unzureichend angesehen.

9. Der pathologische Befund sollte nicht als einzige Rechtfertigung der Gebaermutterresektion betrachtet werden. Gelegentlich ist die Entfernung der Gebaermutter auf symptomatischer Basis notwendig.

10. Der im Vergleich mit der Gesamtzahl von Krankenhausaufnahmen und von groesseren chirurgischen Eingriffen beobachtete Rueckgang in der Zahl der Gebaermutterresektionen stellt eine lobenswerte Tendenz dar.

SUMÁRIO E CONCLUSÒES

1. As observações de 801 pacientes consecutivos submetidos a histerectomia em um período que abrange cinco anos são revistas.

2. A crescente aceitação da operação total como processo de escôlha se torna agóra manifesta neste hospital, como é indicado pelas percentagens relatadas.

3. Os grupos de idade nos quais esta operação foi praticada seguem intimamente o padrão nacional, e, como era de se esperar, a maioría dos pacientes está na quarta e quinta década da vida.

4. A morbilidade e a mortalidade encontradas são relativamente baixas comparadas com as de outras publicações.

5. A raquianestesia foi escolhida para 94 por cento dos pacientes, o que representa um número bastante alto.

6. A hospitalização pos-operatória tornou-se gradativamente menos demorada com o correr dos anos.

7. Há indicios de que um melhor estudo póde resultar em grande perfeição de diagnóstico pre-operatório e ao mesmo tempo reduzir o número de operações injustificadas Quando comparada com outras publicações, contudo, póde parecer que a histerectomia não é uma operação de que se tenha abusado neste hospital.

8. O manêjo de lesões malignas do útero e da cervix, sob o ponto de vista diagnóstico e terapêutico, é considerado inadequado em um grande número de casos.

9. O relatório do anatomo-patologista não deve ser considerado como a única justificação para a histerectomia. A remoção de um útero é ocasionalmente necessaria sobre bases sintomáticas.

10. A recente redução no número de histerectomias, quando comparada com os interuamntos totais e com as grandes operações praticadas nos hospitais é uma tendencia louvavel.

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> Nor is it always in the most distinguished achievements that men's virtues and vices may be best discerned; but very often an action of small note, a short saying, or a jest, shall distinguish a person's real character more than the greatest sieges, or the most important battles.
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> —*Plutarch*

Diaphragmatic Hiatus Hernia

Repair by Abdominal or Transthoracic Approach; Critical Analysis of Fifty-Five Cases

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LOS ANGELES

THE repair of an esophageal hiatus hernia is a surgical procedure of considerable magnitude, requiring adequate exposure of the structures involved in order that a permanent repair may be achieved.

Surgeons differ as to whether the abdominal or the supradiaphragmatic approach will best enable them to attain their objective. However, in fairness to himself and to his patients each surgeon should make a careful study of his results. If they compare favorably with those of his colleagues, no amount of persuasion should induce him to alter a technic to which he has become accustomed and which has been eminently satisfactory in his hands.

The logical approach to this problem was made by the author in an analysis of 55 diaphragmatic hiatus hernias repaired by the abdominal or transthoracic approach. These 55 patients were operated on by fourteen different surgeons.

Symptoms.—The symptoms of hiatus hernia may vary from multiple and severe to the occasional case with no symptoms. Branwood has listed the most common complaints as pain, dysphagia, heartburn, flatulence, vomiting and hematemesis. The pain is most often located in the epigastrium and may be a simple epigastric distress of the type commonly seen in other conditions. It may be localized, or it may be transmitted to the back, between the scapulae, under the left scapula, down one or both arms or along the left subcostal margin. There may be a feeling of fullness under the xiphoid or a burning sensation extending upward under the sternum. Acid like eructations and belching accompanied by what the patient refers to as heartburn, are not uncommon. In these cases vomiting or regurgitation of food sometimes occurs. In this series epigastric pain was the predominating symptom, being present in 33 cases. Heartburn of varying degree was present in 12, but in my opinion an adequate history in every instance would have revealed a much higher incidence than is reported here. Vomiting was present in 7 cases and hematemesis and melena each in 5. Flatulence and dysphagia were present in 3 and 2 cases respectively. This incidence is somewhat lower than is usual in a series as large as this.

Age.—This type of hernia usually occurs in the sixth decade of life. Any increase in intra-abdominal pressure evinced by retching, vomiting or coughing, especially in the elderly, may well be a contributing factor. Gilbert has shown that a viscerovisceral reflex will produce a tonic contracture of the esophageal musculature, and the shortening of this organ will pull the cardia up through the esophageal hiatus. Gilbert produces this visceral stimulation by manipulating the lobes of the liver, by dilating the cystic duct or by stretching the walls of the stomach.

In this series the slide indicates that 24 patients were in the sixth decade, with almost no variation in the two decades preceding or succeeding the sixth.

This condition is somewhat more common among women than among men. In this series the ratio was 23 men to 32 women. Pregnancy may be a contributing factor in increasing the incidence in the

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latter. Rigler and Eneboe reported the cases of 195 pregnant women, a series in which they were able to demonstrate an esophageal hiatus hernia in 18 per cent; 10 of these patients were examined after delivery, and the hernia was still present in three. Of the 55 patients operated on, the abdominal approach was used in 30 and the supradiaphragmatic approach in 25.

The recurrence rate may not be entirely accurate, since only about two thirds of the series had an adequate follow-up. On the other hand, one might be justified in assuming that the remaining third presented no symptoms necessitating further study. The number of recurrent hernias operated on by the abdominal approach was 8 of a total of 30, or 27 per cent. The number of recurrent hernias operated on through the transthoracic or supradiaphragmatic approach was 2 of a total of 25, or 8 per cent. In 1 of the 2 recurrences treated by the transthoracic approach the repair of the hiatus was done with catgut. Most surgeons with war experience have learned that after repair of a diaphragm—traumatically injured or otherwise—with catgut alone, a recurrence is almost certain to occur regardless of the approach used. It is also interesting that all of the recurrences presented themselves within the first six months after operation. Probably, if a three-year follow-up were done, the recurrence rate would be higher.

Type of Suture Material.—Silk of varying sizes was used in 42 cases; cotton was used in 5; No. 0 chromic and silk in 3; No. 00 chromic and silk in 1, and No. 1 chromic in 1; silk and fascia lata in 3.

Number of Postoperative Hospital Days.—The average hospital stay when the abdominal approach was used was sixteen days, as compared to an average of twenty-two days when the transthoracic approach was used. It must be recalled, however, that some of these cases date back to 1938, when antibiotics and other adjuncts to postoperative care were not in such common use.

Postoperative Complications. — The postoperative complications in the transthoracic group consisted of thrombophlebitis in 3 cases and pleural effusion requiring aspiration in 4. In the abdominal group there were 2 eviscerations, 2 incisional hernias and 2 pleural effusions requiring aspiration.

Mortality.—There were 4 deaths in this series—2 in the abdominal group and 2 in the transthoracic group. One evisceration and one respiratory failure caused the deaths in the abdominal group. Respiratory failure caused both of the deaths in the transthoracic group, but both patients were poor operative risks and each had a large hernia. One was 80 years old and had hypertensive heart disease; the other had hereditary cerebellar ataxia.

Treatment.—Probably less than 20 per cent of esophageal hiatus hernias are ever surgically treated. Medical management in the way of weight reduction, bland diet, small and frequent feedings, and the use of belladonna or other drugs with an atropine-like action seem to go a long way toward alleviation of the symptoms. However, for active persons in whom the hiatal orifice is large and where ulceration and partial incarceration is common and where discomfort is persistent and severe and sometimes accompanied by hematemesis, a more radical approach must be considered. As has been stated, opinion is divided as to whether the abdominal or the transthoracic approach is the more effective in surgical repair. In either event the sac must be obliterated or removed and a satisfactory closure of the hiatus achieved. The abdominal approach is usually through an oblique left rectus incision. The suspensory ligament of the left lobe of the liver is cut so that this lobe can be retracted to the right, and the hiatus is best closed by lapping its anterior margin over the posterior margin with silk interrupted mattress sutures and then reinforcing the suture line with a running suture of fascia lata anchored with silk. Needless to say this procedure is technically difficult through the abdominal approach, and the recurrence rate is more than three times as great as that recorded when the transthoracic approach is used. The chest approach changes a surgical procedure of considerable magnitude into one which can be performed with a minimum of effort. The wide, direct exposure to the operative field facilitates crushing of the phrenic nerve. This quiets the diaphragm, thereby facilitating the technical part of the repair and also serving as an aid to healing. Furthermore, it eliminates the necessity of exposing and crushing the phrenic nerve through an incision in the neck. The hernia sac is more easily seen and dealt with because the sac is always up in the chest and not in the abdomen. The handling of abdominal viscera is avoided, and dissection and exposure of the full thickness of the diaphragm are more easily accomplished.

In the transthoracic approach the patient is placed on the right side with the left arm drawn up alongside the face, and an incision is made parallel to and over the right rib from its angle posteriorly to the costochondral junction. It may or may not be necessary to resect the eighth rib, depending on the obesity of the patient and on the flexibility of the chest wall.

After the chest has been entered the pulmonary ligament is separated, the left lung being allowed to retract upward. The left phrenic nerve is crushed at the point where it leaves the pericardium. This not only adds to the ease of the repair but facilitates healing and markedly enhances the probability of a permanent cure.

The mediastinal pleura is then opened and the lower end of the esophagus, with its indwelling tube, is encircled by blunt dissection with the index finger. A Penrose drain is placed around it for traction. This traction on the lower part of the esophagus brings the hernia into view, and the hernial sac is then obliterated by a series of silk plication sutures placed circumferentially.

The second and next important step is to narrow the hiatus to such a size that it will just admit the index finger alongside the esophagus. This is done by a series of interrupted sutures through the full thickness of the diaphragm, and these are best reinforced by a second suture of fascia lata obtained from the patient's thigh. The mediastinal pleura is then closed; the lung is expanded by the anesthetist, and the chest wall is closed in the usual manner.

SUMMARY

1. Fifty-five cases of diaphragmatic hiatus hernia are presented.
2. Treatment in this series is almost equally divided between the transthoracic and the abdominal approach.
3. The use of intratrachial anesthesia and antibiotics has made the transthoracic approach the procedure of choice, especially in view of the markedly reduced recurrence rate.
4. The recurrence rate for the abdominal approach was 27 per cent as compared to 8 per cent for the transthoracic approach.
5. The mortality in this series of 55 cases was 2 in the abdominal group and 2 in the transthoracic group. Ordinarily there would be no mortality in a series of this kind, but the 2 deaths occurring in the abdominal group were anesthetic deaths dating back to 1938, while the two transthoracic deaths were due to large incarcerated hernias in poor risk patients —1 was 80 years of age and the other had hereditary cerebellar ataxia.

RÉSUMÉ

1. L'auteur rapporte ici 55 cas de hernie diaphragmatique.
2. Dans cette série, l'auteur s'est servi à peu près également de la voie transthoracique et de la voie abdominale.
3. L'emploi de l'anesthésie intra-trachéale et des anti-biotiques a permis d'utiliser de préférence la voie trans-thora-

cique, surtout à cause du petit nombre de récidives.

4. La récidive, par voie abdominale, fut de 27% comparée à la voie transthoracique à 8%.

5. Le taux de mortalité dans cette série de 55 cas fut de 2 cas pour chaque voie d'accès. Habituellement dans une série de la sorte, il n'y a pas de mortalité; les deux mortalités survenues dans le groupe par voie abdominale survinrent avant 1938 et sont dûes à l'anesthésie, tandis que celle survenue chez les patients opérés par voie trans-thoracique, le risque opératoire étant très mauvais, du fait de volumineuses hernies étranglées; l'un avait 80 ans trandis que l'autre présentait une hérédité d'ataxie cérébelleuse.

RIASSUNTO

1. Presenta 55 casi di ernie hiatus diaframmatiche.

2. Questa serie e' quasi ugualmente divisa fra l'uso del accesso transtorace ed addominale.

3. L'impiego di anestesia intratracheale ed antibiotici ha fatto l'accesso transtorace un procedimento scelto, specialmente nel aspetto del ridotto grado del recidivo.

4. L'apprezzamento del recidivo per accesso addominale era 27% comparabile a 8% all'accesso transtoracico.

5. La mortalita' in questa serie di 55 casi era 2 nel gruppo addominale e 2 nel gruppo transtoracico. Ordinariamente non vi sarebbe mortalita' in serie come questa, ma le due morti riscontrato nel gruppo addominale erano morti anestetiche in data 1938, mentre le due transtoraciche convenevole ad ernie voluminose incarcerate nei pazienti di provero rischio—1 era di 80 anni e l'altro ebbe atassia cerebrale ereditaria.

ZUSAMMENFASSUNG

1. Fuenfundfuenzig Faelle von Hiatusbruch des Zwerchfells werden mitgeteilt.

2. In dieser Serie wurden der transthorakale und der abdominelle Zugang fast gleich haeufig angewandt.

3. Seit der Anwendung der intratrachealen Narkose und der Antibiotika hat sich der transthorakale Weg, besonders im Hinblick auf das erhebliche Herabsinken der Rueckfaelle, zum Verfahren der Wahl entwickelt.

4. Beim abdominellen Zugang kommen etwa 27% Rueckfaelle vor, im Vergleich zu 8% beim transthorakalen Verfahren.

5. Die Sterblichkeitsziffer in dieser Serie von fuenfundfuenfzig Faellen betrug zwei in der abdominellen Gruppe und zwei in der transthorakalen Gruppe. Eigentlich wuerden in einer Serie wie dieser keine Todesfaelle zu erwarten sein. Die beiden Todesfaelle der abdominalen Gruppe waren Folgen der Narkose und datieren aus dem Jahre 1938, und in den beiden Todesfaellen der transthorakalen Gruppe handelte es sich um grosse eingeklemmte Brueche bei Kranken in schlechtem Allgemeinzustand: der eine war 80 Jahre alt, und der andere litt an einer heriditaeren Kleinhirnataxie.

SUMÁRIO

1. Cincoenta e cinco casos de hernia do hiato diafragmático são apresentados.

2. Esta série é quasi igualmente dividida entre o uso de via transtorácica e abdominal.

3. O uso de anestesia intra-traqueial e de antibióticos fez da via intraforacica o processo de escôlha, especialmente em vista da taxa de recurrencia excessivamente baixa.

4. A taxa de recurrencia para a via abdominal foi de 27 por cento, emquanto a da via transtorácica foi de 8 por cento.

5. A mortalidade nesta serie de 55 casos foi de 2 no grupo abdominal e de 2 no grupo transtorácico. Ordinariamente não deveria haver mortalidade em uma série como esta, mas as duas mórtes que ocorreram no grupo abdominal foram mórtes anestésicas datando de 1938, emquanto as duas mórtes transtorácicas foram devidas a grandes hernias encarceradas em pacientes com grande risco—um tinha 80 anos de idade e o outro tinha ataxia cerebelar hereditária.

to say this procedure is technically difficult through the abdominal approach, and the recurrence rate is more than three times as great as that recorded when the transthoracic approach is used. The chest approach changes a surgical procedure of considerable magnitude into one which can be performed with a minimum of effort. The wide, direct exposure to the operative field facilitates crushing of the phrenic nerve. This quiets the diaphragm, thereby facilitating the technical part of the repair and also serving as an aid to healing. Furthermore, it eliminates the necessity of exposing and crushing the phrenic nerve through an incision in the neck. The hernia sac is more easily seen and dealt with because the sac is always up in the chest and not in the abdomen. The handling of abdominal viscera is avoided, and dissection and exposure of the full thickness of the diaphragm are more easily accomplished.

In the transthoracic approach the patient is placed on the right side with the left arm drawn up alongside the face, and an incision is made parallel to and over the right rib from its angle posteriorly to the costochondral junction. It may or may not be necessary to resect the eighth rib, depending on the obesity of the patient and on the flexibility of the chest wall.

After the chest has been entered the pulmonary ligament is separated, the left lung being allowed to retract upward. The left phrenic nerve is crushed at the point where it leaves the pericardium. This not only adds to the ease of the repair but facilitates healing and markedly enhances the probability of a permanent cure.

The mediastinal pleura is then opened and the lower end of the esophagus, with its indwelling tube, is encircled by blunt dissection with the index finger. A Penrose drain is placed around it for traction. This traction on the lower part of the esophagus brings the hernia into view, and the hernial sac is then obliterated by a series of silk plication sutures placed circumferentially.

The second and next important step is to narrow the hiatus to such a size that it will just admit the index finger alongside the esophagus. This is done by a series of interrupted sutures through the full thickness of the diaphragm, and these are best reinforced by a second suture of fascia lata obtained from the patient's thigh. The mediastinal pleura is then closed; the lung is expanded by the anesthetist, and the chest wall is closed in the usual manner.

SUMMARY

1. Fifty-five cases of diaphragmatic hiatus hernia are presented.

2. Treatment in this series is almost equally divided between the transthoracic and the abdominal approach.

3. The use of intratrachial anesthesia and antibiotics has made the transthoracic approach the procedure of choice, especially in view of the markedly reduced recurrence rate.

4. The recurrence rate for the abdominal approach was 27 per cent as compared to 8 per cent for the transthoracic approach.

5. The mortality in this series of 55 cases was 2 in the abdominal group and 2 in the transthoracic group. Ordinarily there would be no mortality in a series of this kind, but the 2 deaths occurring in the abdominal group were anesthetic deaths dating back to 1938, while the two transthoracic deaths were due to large incarcerated hernias in poor risk patients —1 was 80 years of age and the other had hereditary cerebellar ataxia.

RÉSUMÉ

1. L'auteur rapporte ici 55 ca hernie diaphragmatique.

2. Dans cette série, l'auteur s'est à peu près également de la voie tra thoracique et de la voie abdominale.

3. L'emploi de l'anesthésie intra-trachéale et des anti-biotiques a permis d'utiliser de préférence la voie trans-thora-

Treatment of Perforated Gastroduodenal Ulcer

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IT IS NOW generally accepted that extensive resection of the stomach as recommended by Finsterer is the best operation in treatment of chronic-recurrent gastroduodenal ulcer. Dragstedt's bilateral vagotomy, which was first accepted with great enthusiasm, has not given the good permanent results that were expected.

Most authors agree also that perforation of a gastric or duodenal ulcer is an absolute indication for surgical intervention. Conservative treatment of the perforated ulcer as recommended by English authors (Turner, Bedford, Visick and H. Taylor) in the last few years has a higher mortality rate than do other surgical procedures and has found but few supporters.

However, the discussion concerning the most expedient operation for perforated ulcer has not yet been closed. Although primary resection as recommended by von Haberer in 1919 has been widely accepted by contributors to the European literature, the English and American literature reveals almost unanimous recommendation of palliative treatment. Primary resection is not favored.

This question would have been solved in favor of palliative treatment long ago, since this is undoubtedly the milder surgical procedure, if it had given as good permanent results as did primary gastric resection and if primary resection had shown a higher operative mortality rate than that accompanying simple closure of the perforation.

Werbel, Kozoll and Meyer reported that 41.6 per cent of 574 patients on whom palliative operations were performed for perforated ulcers were readmitted to the hospital because of the same complaint. Of this group, 17 per cent had two or more acute reperforations, while 34 per cent suffered from repeated hemorrhage from an ulcer. Illingworth, Scott and Jamieson noted that, of a group of 733 patients treated by palliative operations for perforated ulcer, 40 per cent again had ulcer complaints within one year. On the basis of his own large material and reports in the literature, Kunz stated that only 30 to 40 per cent of the patients who undergo palliative operations remain free of symptoms thereafter, and that more than 60 per cent show a recurrence of the complaints. The permanent results of palliative treatment must therefore be called poor; half of the patients are sure to have symptoms again, to say nothing of the dangers of reperforation, hemorrhage and stenosis. This is not surprising if the chronic and recurrent nature of "ulcer disease" is considered.

One of the main arguments advanced by the proponents of palliative operation is as follows: It is a general surgical rule that only the minimal surgical procedure should be performed on an acutely ill patient. Indeed, there can hardly be a more impressive picture of severe acute illness than that presented by a patient after perforation. The symptoms caused by the leakage of gastric and duodenal contents into the peritoneal cavity are mainly pain and shock and only in a lesser degree infection; the gastric contents of ulcer patients are practically germ-free, owing to the high acidity usually present.

However, if pain can be eliminated and shock minimized by giving blood, plasma and crystalloids, it is possible, with the aid of sulfonamides and modern antibiotics, to perform the operation under conditions only slightly less favorable than in the case of an uncomplicated ulcer. If, in a given case, it has been possible to eliminate shock and if there are no signs of too far advanced peritonitis, primary

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From the Department of Surgery, Landeskrankenhaus Salzburg, Austria (Chief Surgeon, Prof. E. Domanig).

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TABLE 1.—*Comparative Results of Primary Gastric Resection and Palliative Procedures*

Years	No. of Cases	Palliative Operations	+ Result No.	+ Result %	Primary Resection	+ Result No.	+ Result %	Total Mortality, %
1934-46	185	100	23	23	85	12	14.1	18.36
1947-50	73	25	6	24	48	2	4.58	10.95
1934-50	268	125	29	23.2	143	14	9.86	16.04

resection should be done.

The main advantage of primary resection in cases of perforated ulcer is the achievement of a good permanent result—a result as good as that obtained in the treatment of uncomplicated ulcers (90 to 95 per cent permanent recoveries). Also, the psychologic effect on the usually sensitive and nervous patient of being freed of an illness which has usually lasted for several years is of importance. It is not pleasant for a patient, even though the palliative procedure has saved his life, to realize that his illness has not been cured and that he will probably have to undergo a second operation sooner or later.

From 1934 to 1950, 268 patients were operated on for acute perforations of gastroduodenal ulcers at the First Surgical Department of the Landeskrankenhaus of Salzburg, Austria. Of these 43, or 16 per cent, died. One hundred and twenty-five patients were treated by palliative operations, with a mortality rate of 23.2 per cent, whereas in 143 cases primary resection was performed, with a mortality rate of 9.6 per cent. The comparatively higher mortality rate associated with palliative operations is to be explained by the fact that primary resection was performed whenever possible, the palliative operation being done only if the general condition of the patient was very poor or if advanced peritonitis was present.

It may also be of interest to compare the results obtained in the years 1934 to 1946 with those of 1947 to 1950 (Table 1). From this comparison it can be seen that we have been able to achieve a lower mortality rate for the perforated ulcer by using modern methods of anesthesia and by resorting more frequently to blood transfusions as well as to sulfonamide and antibiotic therapy. The decrease in the total mortality rate is unquestionably due to the better results of primary gastric resection, in spite of the fact that our indications for this operation are now far less rigidly fixed than in earlier years.

In Table 2 the mortality figures of authors with a greater number of cases, who perform only palliative operations, are given for comparison. Even though a strict comparison of the results is not possible because different authors work under different conditions, a surgeon working in a hospital in a large city with good means of transportation will have his patients admitted soon after perforation, whereas patients living in places

TABLE 2.—*Results of Palliative Procedures (after Baritell)*

Source	Year	No. of Cases	Mortality, %
Raw, S. C.	1944	312	14.4
Cohn, R.	1941	300	15
Berson, H. L.	1942	151	15.2
Ross, J. C.	1940	175	16
DeBakey, M., and Odom, C. B.	1940	211	17.3
Ross, A., and LaTourneau, G.	1939	220	17.7
Donald, D. C., and Barkett, S. M.	1942	116	18.5
Timoney, F. X.	1943	246	19.5
Griswold, A. R., and Antoncic, R.	1941	102	19.6
Fallis, L. S.	1938	100	20
McCreery, J. A.	1938	170	20.5
Sangster, A. H.	1939	100	23
O'Donoghue, J. B., and Jacobs, M.	1942	200	24.5
Davidson, T. C., and Rudder, F. F.	1940	155	28
Thompson, H. L.	1939	424	28.7
Hartzell, J. B., and Sorock, M. L.	1939	234	28.9
Reed, J. C.	1938	100	30

difficult of access are not infrequently admitted twenty-four or even forty-eight hours after perforation. It can be stated that the mortality of the correctly indicated primary resection is not higher than the average mortality associated with palliative operation.

SUMMARY

Primary gastric resection, when feasible, is recommended as the most desirable method of operation for perforated gastric and duodenal ulcers. The surgical mortality rate is not higher than that of palliative operations, and the permanent results are far better than those of any other method of surgical treatment.

RESUMEN

Se recomienda la gastrectomía primaria cuando es factible, como el método operatorio preferible para las úlceras gastroduodenales perforadas. Su índice de mortalidad no es tan alto como el de las operaciones paliativas, siendo mejores los resultados definitivos que los de cualquier otro tratamiento quirúrgico.

RIASSUNTO

La resezione gastrica primaria, nei limiti del possibile, e' il trattamento di elezione per perforazione da ulcera gastroduodenale. La mortalita' operatoria non e' piu' alta di quella per operazioni palliative, mentre i risultati a distanza sono di gran lunga migliori di quelli ottenuti con altri metodi operatori.

SUMÁRIO

A resecção gastrica primária, quando executavel, é recomendada como método ideal de operações para ulceras gastricas ou duodenais perfuradas. A taxa de mortalidade cirurgica não é mais alta do que as de operações paliativas e os resultados permanentes são muito melhóres do que os de qualquer outro método de tratamento cirurgico.

RÉSUMÉ

Dans les cas d'ulcus perforé du duodénum l'opération de choix est la résection gastrique. Le taux de mortalité n'est pas plus élevé par cette méthode que par d'autres palliatives; de plus les résultats définitifs sont tellement supérieurs.

ZUSAMMENFASSUNG

Als bevorzugte Operationsmethode des durchgebrochenen Magen— oder Zwoelffingerdarmgeschwuers wird — wenn irgend moeglich—die primaere Magenresektion empfohlen. Die chirurgische Sterblichkeitsziffer ist nicht hoeher als bei palliativen Operationen, und die Dauerresultate sind bei weitem besser als die aller anderen chirurgischen Verfahren.

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Indications for Use of Scalp Forceps

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SINCE Gauss in Germany and Willet in America in 1934 recommended the scalp forceps (axis traction forceps) for the treatment of placenta praevia and reported eminently satisfactory results—maternal mortality reduced to 0 and infant mortality to 25 per cent—the scalp forceps has been used also for several other complications.

Like every other obstetric operation, the application of the scalp forceps requires an exact indication. It is all-important to circumscribe the region of application, for either a too extensive or a too narrow application may lead to a discrediting of the method.

We use the scalp forceps as a reliable instrument in the presence of placenta praevia lateralis and marginalis. The results, as expressed in the immediate stopping of hemorrhage, the starting of powerful labor pains and finally spontaneous birth, have made the method indispensable at our clinic. The procedure is simpler than that of balloon therapy; the head is not displaced, hemorrhage is better controlled and neither prolapse nor compression of the umbilical cord occurs. Higher degrees of placenta praevia, particularly placenta prævia totalis, are not a sphere of application for the scalp forceps. At this clinic, cesarean section asserts its right when a viable child is concerned.

As Tasch emphasized in 1941, the scalp forceps is particularly suitable for the treatment of stubborn primary and secondary labor weakness resisting conservative therapy. It is here chiefly a question of cases in which there is an extremely unfavorable prognosis owing to preliminary or premature rupture of the amniotic sac, rigidity of the soft parts, discolored amniotic fluid, incipient infection of the cavum uteri or the toxicosis of late pregnancy. By the help of this instrument one is able to extend the dilatation period effectively and also to influence favorably the course of patients for whom every kind of conservative therapy for weak labor has failed. Women who have been in labor for days and in whom the beginning of infection can be noted, give birth spontaneously a few hours after application of the scalp forceps.

It is not advisable, however, to use the scalp forceps to induce birth when pregnancy has been unduly prolonged. Nor should it be used in a narrow pelvis or during the period of expulsion. During this period, if an indication exists in either mother or child for a speedy ending of the birth, the scalp forceps does not sufficiently meet the requirements. It does not save the mother from convulsive labor, e.g., in cases of vitium cordis or of toxicosis; on the contrary, it aggravates the condition. Moreover, it is too slow in taking effect to compete with the pelvic outlet forceps.

Two conditions must be fulfilled if use of the scalp forceps is to be successful. The os portio, in order to make possible an easy application of the scalp forceps with the patient in bed, must be passable for at least 2 fingerbreadths. With an os portio uteri of this width, simultaneous pinching of the maternal soft parts is not possible if the anterior lip of the os uteri is covered by the surgeon's index finger and the posterior lip by his middle finger. The second condition is that there must be no anomalous condition; birth per vias naturales must appear absolutely possible. As concerns the position of the skull, this is immaterial so far as the method is concerned. Even if the skull passes ballottement above the pelvic inlet, it is possible without difficulty, always supposing that it is fixed from the outside, to reach it with the pelvic forceps.

Application of the scalp forceps is without danger and requires no greater tech-

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nical knowledge than that required for the breaking of the sac. Experience has shown that, after application of the scalp forceps, 400 Gm. of traction will amply suffice. With all childbearing women thus treated, strong labor sets in fifteen to thirty minutes after application of the scalp forceps. When absolute weakness of labor was due to rigidity of the soft parts, we shortened the effect of the scalp forceps essentially by making four to six small portal discissions. After application of the forceps and the carrying out of several such discissions we noted, in an old primipara who had been in labor for one hundred and six hours and in whom birth was complicated by absolute atony of labor, premature rupture of the amniotic sac and beginning infection of the cavum uteri, that six hours and ten minutes later the birth occurred. From the pressure of the protruding head on the Frankenhäuser plexus, strong regular labor pains resulted. We left the scalp forceps lying until the delivery of the skull. In such cases we often noted a low transverse position. If this irregularity persisted we were forced to end the birth by means of the pelvic outlet forceps. This unfavorable position of the skull was perhaps also caused by the fact that the grip of the forceps—as we noted after the birth of the child—was not near or above the axis point, but situated eccentrically above the left or right parietal bone, corresponding to the position of the newly born infant. It is easy to see that this traction, setting in eccentrically, was able to prevent the adjustment of the axis point in the axis line, which explains this anomaly of birth. On the strength of this observation we always removed the scalp forceps as soon as the skull approached the floor of the pelvis (rectal control examination allowing us to recognize the position of the skull). With this early removal of the forceps we did not note any delay of the birth process, but could prevent irregular presentation of the skull.

As concerns the duration of traction, we allow the scalp forceps to take effect for four hours at most. In the great majority of cases, birth took place within this time. After four hours, in any case, even if the skull has not yet reached the floor of the pelvis and the soft parts are not entirely compensated, the scalp forceps is removed. In these cases also we have always attained spontaneous birth. Labor continues even after removal of the scalp forceps.

What about injuries to the skull of the child? Every obstetrician recoils from a method that injures the child's scalp. Moreover, statements made in the medical literature on the further course of wounds caused by the grip of the forceps differ considerably. These conflicting reports depend not on the varying models but on (*1*) the differently stated weight and (*2*) the duration of traction by this weight. We have obtained the best results, both as regards the progress of birth and as regards the absence of complications in healing, by traction of 400 Gm. and strict maintenance of the effect for four hours. It is easy to understand the formation of necrosis and abscesses if the forceps is used with a weight of 1,000 Gm. and traction is prolonged for more than ten hours, as it has often been done by some obstetricians.

Within the last few years we have applied the scalp forceps to 99 childbearing women with primary and secondary stubborn weakness of labor resisting every conservative therapy. Of these 99 women, 25 were "old" women bearing their first child and 47 were "elderly." The remaining 27 were young women bearing their first child or mothers of other children. These births were complicated by preliminary and premature rupture of the amniotic sac, 21 times by pronounced rigidity of the soft parts, 12 times by beginning infection sub partu, and 9 times by a nephrotic and preeclamptic condition. Among these 99 women, discolored amniotic fluid was noted in 32.

Application of the scalp forceps was controlled by the strictest indications. The result of its use in these 99 cases, in which prognosis which was most unfavorable, was as follows: With 3 women forceps had to be removed because of extraordinary restlessness and agitation. The remaining 96 women, on an average, had been in labor for forty-six hours before application of the forceps. The duration of labor from the application of the scalp forceps to the birth of the child was, on an average, three hours and forty minutes. With a 29-year-old primipara suffering from serious nephropathia gravidarum, who had been in labor already for ninety-five hours, expulsion of the skull of the child began within five hours and ten minutes.

Results were particularly striking in old primiparae with rigid soft parts. Here by a combination of the scalp forceps and portio discissions, birth was induced in a short time—sometimes in less than one hour in women who had been in labor for days. The traction in all cases was 400 Gm. In 27 of these 96 women birth was concluded by the pelvic outlet forceps, 9 times in order to save the women the effort of expulsion because of toxicosis, 6 times because of infantile asphyxia and 12 times because of low transverse presentation not to be remedied by conservative means. Child mortality in these births amounted to 12.9 per cent. In view of the unfavorable prognosis, this was certainly a notable result.

As concerns the forceps grip scar in the scalp of the child, we witnessed complete healing without reaction in 75.5 per cent of the cases. A few days post partum, hardly any trace of an injury could be seen. With 17.7 per cent of the children there was a slight inflammation of the scar, but this healed without therapy in a short time. In 6.8 per cent of the cases we noted formation of abscesses ranging in size to that of an Austrian shilling. Suction of the pus and injection of the same amount of penicillin in all cases led to prompt healing of the abscess. In recent years we have not noted any necrosis.

As may be seen from these statements, the scalp forceps is an extraordinarily efficient instrument which, without any technical difficulties, is able to remove complications of the period of dilatation, the first stage of labor, promptly and safely.

SUMMARY

The author points out the advantages of use of the scalp forceps in difficult or complicated deliveries and recommends traction of not more than 400 Gm. maintained for not longer than four hours. He regards the scalp forceps as a thoroughly efficient and reliable instrument in competent hands.

RÉSUMÉ

L'auteur nous donne les avantages de l'emploi du scalp forceps dans les cas d'accouchement difficile et compliqué. Il recommande une traction de pas plus de 400 Gm maintenues pour moins de 4 heures. Il invisage le scalp forceps comme tres efficace quand il est employé par des mains competentes.

RESUMEN

El autor llama la atención a las ventajas del uso de las pinzas de tracción del cuero cabelludo en los partos complicados. El recomienda una tracción de no mas de 400 gramos por und periodo de no mas de cuarto horas. El considera esta clase de pinzas de valor, siempre y cuando el partero sea adepto en su uso.

RIASSUNTO

Raccomanda l'usa di pinze traenti sul cuoio capelluto nei parti difficili o complicati. La trazione non deve superare i 400 Gm. e non deve durare piu' di 4 ore. In mani abili e competenti questo procedimento conduce ad ottimi risultati.

SUMÁRIO

O autor proclama as vantagens do uso do forceps em partos dificeis ou complicados. Recomenda que a tração não seja superior a 400 grs e que não seja mantida por mais de 4 horas. Ele encára o forceps como um instrumento de alta eficiencia em mãos adestradas.

Editorial

Radical Mastectomy

A Comment on the Validity of the Procedure

WHEN a surgical procedure has been passively accepted for more than fifty years and become ingrained in the medical mind, it is obviously difficult to uproot it on presumptive evidence alone, despite the fact that the original was based on presumptive evidence. The belief that surgical therapy is the only modality of treatment that offers any hope of cure in operable cases of carcinoma of the breast is widely accepted today. Still, in spite of great advances in other fields of surgery, the operative management of operable carcinoma of the breast remains one of our most challenging problems. Progress has been made in clinical appreciation and in earlier recognition of the disease, but the therapeutic measures have been fundamentally the same. It seems to me logical to conclude that the current improvements in the results should be attributed to these factors, which lead to earlier treatment, rather than to the type of procedure employed.

The radical mastectomy as devised by Halsted in 1894—the most logical and most acceptable procedure offered to the profession in his time—remains the most widely accepted type of surgical treatment. However, the exact nature of radical operation for cancer of the breast cannot be determined specifically from the literature of today. Indeed, it was not too long after the procedure became established that even Halsted himself appeared somewhat uncertain as to the precise details of the procedure which should bear his name. At one time Halsted did not remove all the pectoralis minor muscle; at another he removed the supraclavicular nodes; still later he removed part of the chest wall. In 1907 he advised stripping the fascia from the upper part of the rectus abdominus, the serratus anterior, the subscapular, and at times the lattissimus dorsi and teres major muscles. He suggested that removal of the shoulder might eradicate metastases to bone. In 1913 he stated that he had discontinued the incision out on the arm, and advised instead a vertical incision extending upward toward the clavicle.

The fundamental measures in the radical mastectomy are still as stated by Halsted: 1. Excision of large areas of skin over the breast. 2. Excision of both pectoralis major and minor muscles. 3. Complete axillary dissection. 4. Removal of all tissue excised in one mass.

These measures adhere to the principle of wide local excision and removal of the area of "*possible*" lymphatic spread. Although the procedure appears to be standardized, there is still a considerable amount of confusion on the subject. The foregoing measures are challenged in the current literature. Accordingly, there are some clinics that question the validity of wide cutaneous excision and others that advocate excision wide enough to require skin grafting. In fact, the general trend is to employ more extensive procedures, with certain clinics considering the following:

1. Extending the classical procedure to include nodes at the base of the neck. 2. Removal of the clavicle for better exposure. 3. Removal of nodes along the internal mammary artery. 4. Removal of ribs involved in the disease. 5. Routine removal of the axillary vein. 6. Removal of the long thoracic and thoracodorsal nerves. 7. Interscapulothoracic amputa-

had to be removed because of extraordinary restlessness and agitation. The remaining 96 women, on an average, had been in labor for forty-six hours before application of the forceps. The duration of labor from the application of the scalp forceps to the birth of the child was, on an average, three hours and forty minutes. With a 29-year-old primipara suffering from serious nephropathia gravidarum, who had been in labor already for ninety-five hours, expulsion of the skull of the child began within five hours and ten minutes.

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RIASSUNTO

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clinics in the United States in which radical mastectomies are performed, is as follows: 72.1 per cent for stage 1; 25.8 per cent for stage 11, and 25 per cent for all stages combined. The report from McWhirter's group is as follows: 50.1 per cent for operable patients treated by radical mastectomy and postoperative irradiation; 62.1 per cent for operable patients undergoing simple mastectomy and postoperative irradiation, and 43.7 per cent for patients in all stages. Since McWhirter perhaps is able to examine his patients quite early and uses adequate postoperative irradiation in all cases, these factors may account in part for his favorable reports; yet the results are impressive enough to indicate that one must maintain an open mind about the simpler forms of therapy.

Regrettably, one sometimes hears one's colleagues brush off the simpler procedures with the remark that these represent a defeatist approach in dealing with carcinoma of the breast. We are all aware of the fact that several uncontrollable factors influence the prognosis in cancer of the breast, such as the age of the patient, the location of the tumor, and the histopathologic picture; but if the conditions are diagnosed at an early stage and if operation is advised and performed when the disease is still in the so-called "benign" stage, long-time survivals and cures would definitely be increased even with the simplest technics.

It appears to me that the aim of the surgeon should be not only to interrupt the disease process but to prolong life and make the patient physically and mentally comfortable. It is no compromise to use discrimination in determining the extent of treatment necessary to relieve or to cure. Mutilation which assures the patient of a cure may be justifiable, whatever its hazards, but needless mutilation is little short of criminal. Today we have no accepted method that guarantees a cure.

The postoperative morbidity that usually follows some radical mastectomies is sometimes worse than the disease itself: the deformed chest, the winged scapula, the large edematous arms are unsightly and in many instances disabling; the mental condition of the patient becomes alarming. There can be little doubt that extreme radical procedures may cause needless disability and suffering.

Some thoughtful surgeons here and abroad have recently begun to wonder whether radical intervention for operable cancer of the breast is justifiable. As a consequence, we are reading today of clinics that have deviated from the radical procedures and adopted a simpler method. As has been mentioned, McWhirter has employed simple mastectomy with postoperative irradiation; some clinics in this country have adopted the so-called "subradical" procedure; and in one of New York City's municipal hospitals the extended simple mastectomy with postoperative irradiation has been adopted as one method of choice. The individual technics of these simpler procedures, the accepted indications, their use and the selection of cases may vary, but the writings of these surgeons indicate a common desire to escape unwarrantable, radical and mutilating procedures. Although these simpler methods are still too recent for the formulation of any definite conclusions, McWhirter's reports are most encouraging and indicate that there may be a better method than radical mastectomy for the treatment of operable carcinoma of the breast.

Surely the beacon of therapeutic choice should be the principle that an operation is performed to help the patient and not to satisfy arbitrary criteria laid down by the surgeon.

—Thomas C. Case, M.D., F.A.C.S., F.I.C.S.

Chapter News

International College of Surgeons

United States and Canadian Chapters

Arnold S. Jackson, M.D., F.A.C.S., F.I.C.S., Secretary

Dr. Armstrong New Surgeon General of Army: The appointment of Major General George E. Armstrong, M.D., to the post of Surgeon General of the United States Army has been confirmed by the Senate. General Armstrong will succeed Major General Raymond W. Bliss, retired.

The new Surgeon General took the oath of office on June 6, at a ceremony in the office of General J. Lawton Collins, Army Chief of Staff. He will serve a statutory term of four years, beginning June 1, 1951.

General Armstrong has served as Deputy Surgeon General for the past four years. He was born in Indiana in 1900. In 1925 he received his medical degree from the state university of Indiana and became a First Lieutenant in the Army Reserve Corps. His internship was served at Letterman General Hospital in San Francisco. On its completion he was commissioned as First Lieutenant in the Medical Corps of the Army.

Major General George E. Armstrong, M.D., F.I.C.S. (Hon.)

He attended the Medical Field Service School at Carlisle Barracks, Pennsylvania, from which he was graduated with honors. He was also an honor graduate of the Army Medical School, Washington, D. C. His advanced studies were pursued at the Medical Field Service School and the Command and General Staff School at Fort Leavenworth, Kansas.

During World War II, Dr. Armstrong served as Assistant Theater Surgeon in China, Burma and India in 1943 and 1944, after which he was Surgeon of the China Theater for two years. He returned to the United States in 1946. After a period of service as Chief of Personnel in the Surgeon General's Office, he was appointed Deputy Surgeon General in June 1947 and has served in that capacity for the past four years.

Dr. Armstrong is a Fellow of the American College of Surgeons, the American Medical Association and the Association of Military Surgeons of the United States. He is a member of the House of Delegates of the A.M.A., a liaison member of the Executive Council of the Association of American Medical Colleges and a member of the Board of Directors of the American Bureau for Medical Aid to China.

General Armstrong's decorations include the Legion of Merit, the Army Commendation Ribbon, the World War I Victory Medal, the American Defense Service Medal, the Asiatic-Pacific Campaign Medal with three bronze stars, the World War II Victory Ribbon, the Chinese Cloud and Banner, the Chinese Legion of Honor, and the Order of the Crown of Italy (Commandership).

Both the College and the Journal extend the heartiest congratulations to General Armstrong on this high and well-earned distinction.

Dr. Lovelace Heads Medical Policy Council: Appointment of Dr. W. Randolph Lovelace, II, as Chairman of the Armed Forces Medical Policy Council, effective July 1, 1951, has been announced by General Marshall, Secretary of Defense. Dr. Lovelace succeeds Dr. Richard L. Meiling, whose resignation as chairman becomes effective on June 30, 1951.

Dr. Lovelace resides in Albuquerque, New Mexico, where he is head of the Section on Surgery and a member of the Board of Governors of the Lovelace Clinic. He is also a member of the Board of Trustees of the Lovelace Foundation for Medical Education and Research. During World War II he was on active duty with the Army Air Force, advancing from the rank of major to that of colonel, which he now holds in the Air Force Reserve. While in active service, Dr. Lovelace was awarded the Distinguished Flying Cross, the Air Medal and three combat stars, the Legion of Merit, and the Army Commendation Ribbon. In 1945 he was presented the Royal Order of the Sword by the King of Sweden.

Having served as surgical consultant for a number of hospitals and two commercial airlines, Dr. Lovelace also acted as special consultant to the Air Force, and was appointed a member of the Armed Forces Medical Policy Council when it was established on January 2, 1951.

Dr. Lovelace was born in Springfield, Missouri, in 1907. He received his A.B. degree from Washington University, St. Louis in 1930; his M.D. at Harvard University in 1934; and an M.S. in Surgery at the University of Minnesota in 1939. He studied surgery in Europe in 1939 under a J. William White Scholarship, and later was graduated from the School of Aviation Medicine, Randolph Field, Texas.

After his internship at Bellevue Hospital, New York City, Dr. Lovelace served as a Fellow of the Mayo Foundation for Medical Education and Research, and later as chief of a surgical section of the Mayo Clinic.

Dr. Lovelace is a diplomate of the American Board of Surgery and a Fellow of the American College of Surgeons, the International College of Surgeons, the Institute of Aeronautical Sciences, and the Aero Medical Association. He is a member of the American Medical Association, the Association of Military Surgeons and many other medical groups. Affiliated with the University of Colorado Medical School as a lecturer in physiology, Dr. Lovelace has also contributed numerous technical papers to medical journals, and was co-winner of the Collier Trophy Award in 1940

Dr. W. R. Lovelace II.

Dr. Max Thorek to Deliver Memorial Lecture: Announcement is made by the Academy of Medicine in the Raritan Bay Area, New Jersey, of the Annual Frank C. Henry Jr. Memorial Lecture by Max Thorek, M.D., F.I.C.S., of Chicago, Ill. on October 17. The lecture, preceded by dinner, will be given at Oak Hills Manor, Metuchen, N. J. Dr. Thorek's subject will be "Surgical Dangers."

The Memorial Lectures have been named in honor of the late Chief of Surgery of the Perth Amboy General Hospital, Perth Amboy, N. J. Dr. Henry died in an automobile accident on March 6.

gathering at a luncheon in the Howard Cafe.

The scientific program, which will be held at the Elks Club, is as follows:

1:45 p.m.—*Persistent Symptoms after Cholecystectomy.* Dr. N. Frederick Hicken, Regent, I.C.S., State of Utah, Salt Lake City, Utah.

2:15 p.m.—*Fractures of the Lower Extremities, Including the Ankle.* Dr. Curtis Lee Hall, Washington, D. C., Vice-President, International College of Surgeons, and Past President, U. S. Chapter.

2:45 p.m.—Intermission to view exhibits.

3:00 p.m.—*Gastric Carcinoma.* Dr. William Carpenter MacCarty, Sr., Rochester, Minnesota, International Representative-at-Large, I.C.S.

3:30 p.m.—*Dupuytren's Contracture.* Dr. Henry W. Meyerding, Rochester, Minnesota, President, U. S. Chapter, I.C.S.

4:00 p.m.—Discussion of all papers.

4:30 p.m.—Business meeting and annual election of officers of each state separately.

The meeting will be dismissed promptly after the business sessions to allow all present to make plans to attend the Smoker of the Wyoming State Medical Society, which will be held the same evening, Sept. 26.

The officers are as follows:

Idaho Section

Regent	Dr. Walter R. West Idaho Falls, Idaho
Vice-Regent	Dr. S. Wallace Bond Twin Forks, Idaho

Montana Section

Chairman	Dr. Clyde H. Fredrickson Missoula, Montana
Vice-Chairman	Dr. Louis W. Allard Billings, Montana
Secretary-Treasurer	Dr. James C. MacGregor Great Falls, Montana
Regent	Dr. James C. MacGregor Great Falls, Montana
Vice-Regent	Dr. Louis W. Allard Billings, Montana
Vice-Regent	Dr. James C. Shields Butte, Montana

Wyoming Section
(HOSTS OF THE MEETING)

Chairman	Dr. John D. Shingle Cheyenne, Wyoming
Vice-Chairman	Dr. Karl E. Krueger Rock Springs, Wyoming
Secretary-Treasurer	Dr. L. H. Wilmoth Lander, Wyoming
Regent	Dr. W. Andrew Bunten Cheyenne, Wyoming
Vice-Regent	Dr. Herbert L. Harvey Casper, Wyoming

The Committee on Arrangements consists of Dr. W. Andrew Bunten, Wyoming, Chairman; Dr. Karl E. Krueger, Wyoming, Co-Chairman; Dr. James C. MacGregor, Montana, and Dr. Walter R. West, Idaho.

Those desiring to make reservations for this event will please communicate with Dr. J. P. Muir or Dr. E. B. Burgeon, 430 Broadway, Rock Springs, Wyoming.

Southern California Section: The third annual Clinic Day Program of the Southern California Section of the United States Chapter was presented in the Auditorium of the Los Angeles County Medical Association on Wednesday, August 15, of this year.

The program was as follows:

MORNING SESSION

JULES BERTERO, M.D., Santa Maria, *Presiding*

A.M.	
9:00- 9:30	**Henry, Merlyn George, M.D., M.S., F.A.C.S., F.I.C.S.** Los Angeles, California Attending surgeon, Good Samaritan Hospital. "Reconstruction of The Abdomen in Patients with Voluminous and Complicated Ventral Herniae"
9:30-10:00	**Boyd, Walter Harrington, A.B., M.D., F.I.C.S.** Long Beach, California Staff of St. Mary's Long Beach Hospital, and Long Beach Community Hospital. Designated Physician, Bureau of Employees' Compensation (U. S. Govt.), Senior Surgeon (reserve) U. S. Public Health Service. "Inguinal Herniae, Direct and Indirect"
10:00-10:30	**Harris, Harold I., B.A., M.D., F.I.C.S.** Los Angeles, California Assistant Professor of Surgery, C.M.E. Founder and Chief Plastic Surgeon, White Memorial Clinic. Senior Attending Plastic Surgeon, White Memorial Hospital. Chief of Plastic Surgery Service of Los Angeles County General Hospital. C.M.E. Senior Attending Surgeon Oral Surgery, Children's Hospital and Clinics. Attending Plastic Surgeon, Temple Hospital. "The Problem of Harelips"
	LYLE O. SHAW, M.D., South Gate, *Presiding*
10:30-11:00	**Foote, Robert F., M.D., F.A.C.S., F.I.C.S.** Bakersfield, California Senior Attending Surgeon, Kern General Hospital, Mercy Hospital, Bakersfield Hospital, and San Joaquin Hospital. "Surgical Manifestations of Coccidiomyocosis"
11:00-11:30	**Belt, Elmer, M.D., F.I.C.S.** Los Angeles, California "Early Diagnosis of Cancer of the Prostate"
11:30-12:00	**Albaugh, Clarence H., M.D., F.A.C.S., F.I.C.S.** Los Angeles, California Instructor in Ophthalmology at U.S.C. Medical School. Staffs: St. Vincents, Hollywood Presbyterian, Childrens, Los Angeles County General, and Eye and Ear Hospitals. "A New Type of Implant for Enucleation"

AFTERNOON SESSION

LEWIS A. ALESON, M.D., Los Angeles, *Presiding*

P.M.

1:30- 2:00 Hankins, Franklyn D., M.D., D.I.B.S., F.I.C.S.
San Diego, California
Assistant Clinical Professor of Surgery C.M.E., Consultant in Oncology, U. S. Naval Hospital, San Diego. Attending Surgeon, Mercy Hospital, San Diego, and Los Angeles County General Hospital.
"Adenocarcinoma of The Appendix"

2:00- 2:30 Stein, Justin J., M.D., F.A.C.S., F.I.C.S
Los Angeles, California
Surgeon, Los Angeles Tumor Institute, Senior Surgeon, California Lutheran Hospital; Attending Surgeon, Malignancy Service, Los Angeles County General Hospital; Tumor Consultant, Veterans' Administration, West Los Angeles, Surgical Consultant Methodist Hospital; Assistant Clinical Professor of Surgery, C M.E.
"The Diagnosis and Treatment of Colon Cancer"

2:30- 3:00 Daniel, William H., M.D., F.A.C.S., F.I.C.S.
Los Angeles, California
Associate Clinical Professor of Surgery, U.S.C
"Carcinoma of The Anus and Rectum"

3:00- 3:30 Gowdy, Ralph A., B.S., M.D., F.I.C.S.
Los Angeles, California
Attending Surgeon St. John's Hospital and Santa Monica Hospitals. Surgical Consultant to Douglas Aircraft Co, Inc, Fellow of Southeastern Surgical Congress.
"Small Bowel Adhesions Without Adhesions"

GEORGE K. DUNKLEE, M.D., San Luis Obispo, *Presiding*

3:30- 4:00 Desmond, M. A., M.D., F.A.C.S. F.I.C.S.
Santa Monica, California
Member of The Senior Surgical Staff, Santa Monica Hospital.
"A Five Year Survey of Biliary Tract Surgery in a 200 Bed Hospital"

4:00- 4:30 Raney, Rupert B., M.D., F.I.C.S.
Los Angeles, California
Assistant Clinical Professor of Neurosurgery, U.S.C.
"The Significance of Angiography in The Diagnosis of Surgical Lesions of The Central Nervous System"

4:30- 5:00 Whitsett, John W., A.B., M.D., F.I.C.S., D.I.B.S.
Hollywood, California
Attending surgeon, Hollywood Presbyterian Hospital, Vice-President of Surgical Section of Los Angeles County Medical Association, Consultant in Surgery, State Compensation Insurance Fund; Specialist Panel, General Surgery, Union Oil Company
"Treatment Trends in Varicose Veins"

5:00- 5:30 McMaster, Paul E., M.D., F.A.C.S., F.I.C.S.
Los Angeles, California
Clinical Professor of Orthopædic Surgery, U.C.L.A; Consultant in Orthopædic Surgery, Wadsworth Veterans' Hospital; Staffs of Good Samaritan, Hollywood Presbyterian, Cedars of Lebanon, Children's, and Los Angeles County General Hospital.
"Injuries of the Patella"

EVENING SESSION

Hotel Mayfair, 1256 West 7th Street, Los Angeles

P.M.

6:00- 7:00 Social Hour
7:00- 8:00 *Dinner*

Program

J. JAMES DUFFY, M.D., Los Angeles, Chairman of the Southern California Section, *Presiding*

GUEST SPEAKER

R. Lee Clark, Jr., M.D. M.Sc. (Surgery)
Director and Surgeon-in-Chief, University of Texas, M.D. Anderson Hospital for Cancer Research, and Dean of the University of Texas Postgraduate School of Medicine; Professor of Surgery, Houston.
"The Present Status of Cancer Therapy"

Prof. Flörcken Honored: Prof. Dr. Heinrich *Flörcken*, of Frankfort, recently celebrated his seventieth birthday. A special issue of *Zentralblatt für Chirurgie* (Vol. 76, No. 13) was dedicated, in honor of this occasion, to this eminent German surgeon. An outline is given of the interesting life of Prof. Flörcken's and his contributions to surgery.

Among the various contributions to this number are: "The Use of Atomic Energy in Medicine, the Significance of Isotopes in Diagnosis and Therapy, the Physiology and Patho-Physiology of the Thyroid, and the Treatment of Malignant Struma," by Dr. Alfred Wald; "Experiences with Free Cutis Transplants after Rehn in the Treatment of Large Abdominal Wall Hernias," by Dr. R. Leo Giegerich; "Dangers of Intra-Lumbar Use of Calcium Gluconate in the Treatment of Tetanus," by Dr. Altfrid Kirchhoff; and "The Treatment of Talus Dislocation Fracture by Dr. R. Riemann.

The International College of Surgeons joins in extending the warmest congratulations to Prof. Flörcken on this occasion, with a sincere wish that he may continue in his excellent work *ad multos annos!*

General News Notes

Gorgas Award: The 1951 Gorgas Award of the Association of Military Surgeons of the United States will be presented to Rear Admiral Charles S. Stephenson, USN., Retired, medical advisor of the Disabled American Veterans.

One of medicine's highest honors, the Gorgas Award, will be presented to Admiral Stephenson in October at the association convention in Chicago. The presentation consists of a silver medal, a scroll and a cash award of $500.

The DAV medical advisor achieved distinction by his work in tropical diseases. He also organized and directed the United States Typhus Commission for which he was decorated by the United States government.

Admiral Stephenson was notified of his selection for the Gorgas Award by Col. James M. Phalen, U. S. Army, Retired, secretary of the Association of Military Surgeons.

After more than 30 years of distinguished service, including the Mexican campaign, World War I, and in China with the Marine Corps Expeditionary Force, Admiral Stephenson retired in 1944. He directed the Navy's Division of Preventive Medicine in Washington, D. C., from 1936 to 1942.

His decorations include the Legion of Merit and the Purple Heart.

Essay Award: The Board of Regents of the American College of Chest Physicians offers a cash prize award of two hundred fifty dollars ($250.00) to be given annually for the best original contribution, preferably by a young investigator, on any phase of thoracic disease.

The prize is open to contestants of other countries as well as those residing in the United States. The winning contribution will be selected by a board of impartial judges, and the award, together with a certificate of merit, will be made at the forthcoming annual meeting of the College. Second and third prize certificates will also be awarded.

All manuscripts submitted become the property of the American College of Chest Physicians and will be referred to the Editorial Board of the College journal, *Diseases of the Chest*, for consideration. The College reserves the right to invite the winner to present his contribution at the annual meeting. Contestants are advised to study the format of *Diseases of the Chest* as to length, form and arrangement of illustrations, to guide them in the preparation of the manuscript.

The following conditions must be observed: 1. Five copies of the manuscript, typewritten in English, should be submitted to the executive office, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois, not later than April 1, 1952. 2. The only means of identification of the author or authors shall be a motto or other device on the title page, and a sealed envelope bearing the same motto on the outside, enclosing the name of the author or authors.

The committee in charge of this competition consists of Dr. Henry C. Sweany, M.D., Chairman; Dr. E. Raymond Fenton; Dr. Joseph F. Hiatt; Dr. Hugh L. Houston, and Dr. David Salkin.

Kessler Institute Seminar: The Kessler Institute for Rehabilitation, Pleasant Valley Way, West Orange, New Jersey, announces that a seminar on the causes of congenital amputation and rehabilitation of the patients will be held at the Institute on Wednesday, October 17. The seminar program will be held in the morning starting at 9:00 a. m. and is open to all pediatricians, obstetricians, gynecologists, orthopedic surgeons and technical personnel in rehabilitation and limb manufacturing.

The moderator will be Dr. Harrold A. Murray of Newark. Among the speakers will be Dr. Douglas P. Murphy of Gynecean Hospital, institute of gynecologic research of the University of Pennsylvania, and Dr. L. C. Dunn of the Department of Zoology of Columbia University.

The seminar is being held in conjunction with the semiannual free clinic for child amputees. The afternoon program will be devoted to the individual examination of children by Dr. Henry H. Kessler, Medical Director of the Institute, at which time recommendations will be made for their rehabilitation programs. Parents will be given orientation to the problems of congenital defects and specific instructions for the care of the amputee child at home.

Physicians may refer child amputees to

the clinic by writing to the Medical Director of the Institute. There is no charge for the seminar, and luncheon will be served at the Institute at a nominal charge.

Ambulatory Fracture Association Meeting: The twelfth annual meeting of the Ambulatory Fracture Association will take place October 8 to 11, inclusive, at the Arrowhead Springs Hotel of San Bernardino, California. All physicians and surgeons are cordially invited to attend. Special arrangements for ladies' entertainment are being made.

MONDAY, OCTOBER 8
9:00 A. M. Breakfast 10:30 A. M.
Introductory Presentation
10:30 A. M. Scientific Presentation 5 P. M.
8:00 P. M. Fellow Dinner
Entertainment
This dinner is for the doctors and their wives as well as all guests.

TUESDAY, OCTOBER 9
9:00 A. M. Scientific Presentations 5 P. M.
7:00 P. M. Chuck Wagon Dinner
at Lake Arrowhead
Entertainment
This promises to be an outstanding event, especially in the environment of beautiful Lake Arrowhead.

WEDNESDAY, OCTOBER 10
9:00 A. M. Membership Business 11:30 A. M.
Meeting
11:00 A. M. Scientific Presentation 3 P. M.
9:00 P. M. Entertainment—Travelogue
African Wild Animal Hunt

THURSDAY, OCTOBER 11
9:00 A. M. Hospital Day 4:00 P. M.
Local hospital will proide facilities for operative clinic and also arrange for presentation of clinical material. Slides by local surgeons. Afternoon—X-ray study presentation and case presentation.
8:00 P. M. Twelfth Annual Banquet
International Guest Speaker
Entertainment

SUNDAY EVENING, OCTOBER 7
Reception—Arrowhead Springs Hotel
Sponsors—San Bernardino County Medical Society.

Both scientific and commercial exhibits will be featured.

The registration fee is $15. Registrations will be taken from 2 to 8 p.m. on Sunday October 7 and from 8 a.m. to 4 p.m. on Monday through Thursday. Registration fees are acceptable in advance to within ten days of the meeting.

American College of Chest Physicians: The Interim Session of the American College of Chest Physicians will be held at the Ambassador Hotel, Los Angeles, on Dec. 2 and 3, 1951. On Sunday, December 2, a scientific session will be presented, sponsored by the California Chapter of the College, including round-table luncheon discussions and a conference on roentgenology. A banquet will be held in the evening. The Board of Regents of the American College of Chest Physicians will meet on Monday, December 3, as will various councils and committees of the College.

Dr. Edward W. Hayes of Monrovia, California, is chairman of the general arrangements committee for the Interim Session of the College, and Dr. Alfred Goldman of Beverly Hills is chairman of the scientific program committee.

Mississippi Valley Medical Society: The Sixteenth Annual Meeting of the Mississippi Valley Medical Society will be held at the Père Marquette Hotel, Peoria, Illinois, on Sept. 19, 20, and 21, 1951, under the presidency of Dr. Ralph McReynolds of Quincy, Illinois. Over thirty clinical teachers from the leading medical schools will conduct this postgraduate assembly. The entire program is planned to appeal to general practitioners. There will be over 50 scientific and technical exhibits, noon roundtable luncheons, etc. No registration fee will be charged, and every ethical physician is cordially invited to attend. A copy of the program may be obtained from Harold Swanberg, M.D., Secretary, 209-224 W.C.U. Bldg., Quincy, Illinois.

Yeshiva University Plans Medical School: On Dec. 15, 1950, New York State's Board of Regents amended the charter of Yeshiva University, empowering it to open a medical and dental school. It is planned to provide eventually for 400 students in each of the two Schools. The sole criterion for admission will be scholarship and character. No distinction will be made as to the origin of applicants.

Yeshiva University, at Amsterdam Avenue from 185th to 187th Street, New York City, comprises eight schools and divisions, with an enrollment of almost 2,000 students from all parts of the world. The eight schools and divisions are the Rabbi Isaac Elchanan The logical Seminary, the Colle a

Sciences, the Teachers' Institute, the Bernard Revel Graduate School, the Harry Fischel School for Higher Jewish Studies, the School of Education and Community Administration, the Talmudical Academy High Schools and the Institute of Mathematics. The University sponsors a number of auxiliary services, including a psychological clinic, an educational service bureau, an audio-visual service and a Community Service Bureau. Three noteworthy scholarly publications emanate from the University, "Horeb" and "Talpioth" in Hebrew, and the internationally-famed mathematical journal "Scripta Mathematica." The institution started in 1897 with the founding of the Rabbi Isaac Elchanan Theological Seminary, and reached University status in 1945.

Brazilian Plastic Surgeons Organize: In January, 1951, the Pernambuco Department of The Brasilian Society of Plastic Surgery was founded at Recife, Brasil. The fundamental purposes of this new Society are to increase the development of the specialty and to encourage the interchange of ideas and technics. The first Board, elected for a term of two years, President, Dr. João Alfredo; Vice-President, Dr. João Suassuna; First Secretary, Dr. Alipio Pernet; Second Secretary, Dr. Bianor da Hora; Librarian, Dr. Dirceu Velôso; Treasurer, Dr. André Basto.

Vienna Institute of Anatomy Rebuilt: The building of the Vienna Institute of Anatomy in the Waehringerstrasse, 70 per cent of which was destroyed as a result of the war, is expected to be rebuilt by the middle of this year. After the superstructure had been propped up and the débris cleared away in 1948, the Ministry of Trade and Reconstruction directed the Federal Buildings Authority to start work on the new roof truss. Reconstruction of the second lecture hall and of the interior facilities was begun in 1950. The work of finishing the building is now in progress. A new ventilating system has also been installed, and the entire sanitary and electrical installations adapted to modern scientific demands.

Vienna Medical Faculty Elects New Dean: Prof. Herrmann Chiari, M.D., Chairman of the Institute for Pathological Anatomy, has been elected Dean of the Medical Faculty at the University of Vienna for the 1951-52 academic year. Dr. Chiari has been chairman of the institute since 1936 and a pupil of his noted predecessor Prof. Maresch.

Mexican University Celebrates: The National University of Mexico will commemorate the Fourth Centenary of the University, beginning the festival on Sept. 21, 1951.

Perurian Society of Urology: This organization announces the election of the following officers for the term 1951-52: President, Dr. Ricardo Angulo; Vice-President, Dr. Ysmael Seminario; Secretary, Dr. Alex Higginson; Treasurer, Dr. Jorge Salazar Araoz, and Librarian, Dr. Romulo Velasquez.

Immunization Data: The latest facts on immunization for travelers going to every section of the world are detailed in a booklet just released by the U. S. Public Health Service. The title of the booklet is "Immunization Information for International Travel." It includes official information on the immunizations required and recommended by each country and the immunizations recommended by the Public Health Service as a precautionary measure for persons traveling abroad. Other items of importance to the traveler include an explanation of the procedure for having inoculations recorded on the International Certificate of Inoculation and Vaccination; a list of Public Health Service facilities where yellow fever inoculations can be obtained; and maps showing the yellow fever endemic areas of the world.

Travelers can obtain this information by communicating with local and State Health departments.

The booklet may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C. for 20c a copy. A twenty-five per cent discount is allowed on orders of 100 copies or more delivered to the same address.

Rubber Skeletons: The Natural Rubber Bureau of Washington, D. C., announces an issue of *Rubber Developments* containing an account of a new kind of synthetic skeleton. When it was found that the rib cages of synthetic skeletons were frequently fractured in their travels to the medical schools, ribs made of white latex were substituted for the breakable synthetic material previously used. Such latex ribbed skeletons can be shipped with no danger of breakage.

New Books

Hypnoidal Psychotherapy. By Margaret Steger. New York: Froben Press, Inc., 1951. Pp. 150.

The title of this book is misleading. By far the greater part is taken up by sensible, though generalized, descriptions of various aspects of psychology, psychosomatic medicine, psychotherapy, Jung's and Freud's psychoanalysis, alcoholism, homosexuality, and some principles of child guidance.

As far as the so-called "hypnoidal psychotherapy" is concerned, the term is over pretentious. The author uses and recommends a sort of relaxation exercise as an additional technic after having dedicated half of the psychotherapeutic session to an anamnestic analysis. The hypnoidal state differs from hypnosis in that neither trance nor cataleptic phenomena are produced; the subject oscillates between wakefulness and sleep. In this "hypnoidal state" the patient is often quite susceptible to verbal suggestions, and the psychotherapist utilizes this occasion to formulate in simple, often repeated and precise sentences the essential points gained during the analysis. Since this reviewer has employed the same method in appropriate cases for over twenty-five years, he does not deny the usefulness of this technic as an additional psychotherapeutic feature, but does not feel that it deserves the status of a specific psychotherapy. He agrees that the hypnoidal state differs from hypnosis, though not as sharply as the author tries to prove. The borderlines are fluctuating.

ERNST HAASE, M.D.

Electroencephalography in Clinical Practice. By Robert S. Schwab. Philadelphia: W. B. Saunders Company, 1951.

This is an orderly and concise primer of electroencephalography which clearly presents the basic principles.

After an interesting historical summary, the author gives a brief description of the neurophysiologic nature of brain waves.

The chapter on technic is profusely illustrated and is an excellent guide to those wishing to set up a complete apparatus. An excellent and detailed discussion of electroencephalography in cases of epilepsy and in the solution of other neurosurgic problems is of great help to the neurosurgeon.

Types of brain waves in observed psychiatric practice, including those associated with behavior disorders, the psychoses and mental deterioration, are discussed.

Throughout the text the author lays stress on the practical application of electroencephalography. This little book is an excellent guide to the internist, the neurologists and the neurosurgeon.

EMIL SELETZ, M.D.

Lehrbuch der Chirurgie. By Leopold Schönbauer. Vienna: Franz Deuticke, 1950. Vol. 2. Pp. 496, with 275 illustrations.

Like its predecessor, the present volume is a valuable contribution to contemporary surgical literature. Surgical conditions of the abdomen and the extremities are described in a strictly up-to-date manner. The most modern advances in surgical knowledge are outlined; e.g., water and electrolyte balance and correlated subjects are ably discussed.

The historical notes accompanying the various chapters are a pleasing feature.

The book opens with a discussion of the abdominal parietes. This is followed by a thorough exposition of postoperative physiologic changes and their readjustment. An illuminating section on the peritoneum describes the various forms of peritonitis and their treatment.

Chapters on surgery of the diaphragm, liver and biliary passages, pancreas and spleen presents the various surgical diseases of these structures in detail. Of course, in a work like this one cannot expect a thoroughgoing description of the operative procedures employed in modern times; space does not permit it.

Surgery of the stomach and duodenum is compactly but thoroughly discussed, as are surgical diseases of the gastrointestinal tract. The last-mentioned section is excellent. The chapter on hernia is also exceptionally good. Since Schönbauer has had a great deal of experience with diseases of the extremities, his teachings with regard to these are authoritative.

The work is concluded with a section on nomenclature, old and new. This is followed by an index of authors and a comprehensive subject index. The paper, binding and printing are excellent. The illustrations are chosen. All in all, th[illegible] will be a able addition to the library of any student, surgeon or general practitioner. Particularly, those who read German will find it an excellent textbook.

M. T.

The Neuroses: Diagnosis and Management of Functional Disorders and Minor Psychoses. By Walter C. Alvarez. Philadelphia: W. B. Saunders Company, 1951. Pp. 667.

This book offers the reader much more than its unassuming title promises. Even a psychiatrist can learn a great deal from this nonpsychiatrist's genuine, vivid and colorful report of his large experience with patients suffering form neuroses, functional disturbances and minor mental disorders, and from his tactful, kind and wise approach to their quandaries, strains and problems as reflected in their psychosomatic complaints. This reviewer, at least, read the book with great enjoyment and a hearty approval of all its basic concepts.

Special attention is given to borderline cases, in which mild disturbances resembling psychosis, epilepsy or hysteria may mislead even the trained physician, and to the various psychosomatic features in the fields of medicine and surgery.

The practical hints given in this delightful postgraduate course will help any physician or surgeon to avoid the pitfalls and mistakes so often attendant upon the handling of a nervous patient. It will also help to make him a better diagnostician and a more skilful therapist.

ERNST HAASE, M.D.

Heart Disease in Pregnancy. By A. Morgan Jones. New York: Grune and Stratton, 1951. Pp. 53.

This valuable monograph concerning a series of 1,500 women with organic cardiac disease covers conditions observed before, during and after pregnancy. After analysis of the resulting statistics the author has arrived at certain general conclusions as to the classification and treatment of the diseases studied, the question of terminating pregnancy, etc. Morbidity and mortality rates are also presented and analyzed.

The book comprises ten chapters, the last of which is in the nature of a summary. The material is concise and well written. There are seven tables, three figures and four plates. The summary chapter is followed by a good bibliography and a comprehensive index.

In the reviewer's opinion this little volume should be in the library of the general practitioner, the internist and the obstetrician since it supplies answers to many troublesome questions connected with organic heart disease in pregnant women.

DAVID GOLDFINGER, M.D.

Pain Mechanisms. By W. K. Livingston. New York: The Macmillan Company, 1947. Pp. 235.

The complex problem of pain in its neurophysiologic, clinical and psychologic aspects has fascinated many such great physicians as Mitchell, Lériche, Head and Forster, to whom the author of this instructive book gives full credit; in fact, he dedicates a good part to the pioneering work of Mitchell.

The author's own clinical cases are excellently observed and lucidly described. They alone constitute a valuable contribution to the subject, especially as regards the phenomena of causalgia, reflex paralysis and the phantom limb. They also emphasize the importance of determining as early as possible the trigger zone for the pain.

Dr. Livingston rightly stresses the complex nature of the pain sensation and all the modifications that a pain experience resulting from a local stimulus may undergo as a result of changes in the peripheral environment, alterations of the spinal receiving centers and influences exerted along the pathway to the brain, including variations in the psychologic apperception of the individual patient. He also rightly warns against loose use of the term "psychic pain" in any case in which there is not enough objective clinical evidence to prove the organic nature of the patient's complaint; when there is a discrepancy between the violence of the pain and the obvious pathologic picture, or when the location or the spread of the painful sensation does not confirm with current anatomic knowledge. These are just the conditions that often prevail in the post-traumatic pain syndrome, and one may easily wrong the patient in his tremendous suffering.

Surgeons are often confronted with a vicious circle. The different methods of breaking the circle by neurosurgical intervention are discussed. The book is practical as well as thought-provoking.

ERNST HAASE, M.D.

Neuro-Surgical Treatment of Traumatic Paraplegia. By J. Lawrence Pool. Springfield, Ill.: Charles C Thomas, Publisher, 1951.

This is a concise yet detailed monograph on the diagnosis and neurosurgical management of the patient with injury to the spinal cord. It is profusely illustrated.

Classifications of spinal cord injury are grouped under concussion, contusion, hemorrhage (hematomyelia), lacerations and compression. Under compression are discussed the various types of skeletal injury associated with various degrees of involvement of the spinal cord.

The physiologic aspects of the spinal cord are discussed. Explanation is given of spinal shock in contradistinction to surgical shock. Types of paraplegia are enumerated, and the degree and origin of pain are discussed.

The important principles of treatment are outlined as follows: (1) conservative treatment should be employed whenever possible, and (2) compound fracture of the spine requires surgical débridement, careful inspection for cord or root compression and careful closure.

Great stress is placed on the care of the skin and the urinary bladder and on rehabilitation.

EMIL SELETZ, M.D.

Nouvelles Techniques Operatoires dans la Chirurgie du Cancer (New Operative Technics in the Treatment of Cancer). By Antonio Prudente and Henrique Melega. Paris: Masson et Cie., 1951. Pp. 296, with 180 illustrations.

This work is based on the recent trend toward surgical intervention for malignant tumors hitherto considered inoperable. The chief protagonist of this movement in the United States is Brunschwig, who has published a work on the subject. Some, of course, do not favor an extremely radical procedure; those who do are convinced that in the face of absolute incurability any attempt to relieve the existent condition is justifiable.

Fundamentally the technic recommended in this book consists of operation in a "monoblock"; that is, resection of the primary lesion together with the surrounding tissues and nodules, in one specimen.

The work opens with a discussion of exenteration of the eye supplemented by parotidectomy and complete resection of the cervicofacial lymph nodes. This is followed by a description of electrosurgical ethmoidectomy combined with resection of the mentolabial group of lymph nodes in monoblock. In removal of the mandible the lymph nodes of the neck are included. Electrosurgical removal of tumors of the neck, axilla or inguinal region is done in the same general fashion.

There is a description of esophagoduodenosplenopancreatectomy performed by an abdominothoracic approach. This is followed by a section on exenteration of the pelvic cavity, male and female. Scapulectomy is accorded a special chapter, as is interscapulohumerothoracic amputation.

The concluding part of the work deals with coxofemoral disarticulation and dissection of the lymph nodes, and with interilioabdominal amputation.

The illustrations are very good pen drawings, supplemented by photographs. The text is well correlated with these illustrations. Those who read French will find this book a worth-while addition to their libraries.

M. T.

We have received the world as a legacy which none of us is allowed to impair, but which, on the contrary, every generation is bound to bequeath in a better state to its posterity. —*Joubert*

One is not much the better for a lively mind unless it is an accurate one. A clock's perfection is not its pace but its regularity. —*Vauvenargues*

Abstracts from Current Literature

Malignancy in Adenomas of the Thyroid.

Lahey, F., and Hare, H.: J.A.M.A. 145:689, 1951.

Except in rare cases it is generally accepted, for practical purposes, that carcinoma of the thyroid originates in preexisting adenoma. There is great variation in the reported incidence of carcinoma in various types of adenomatous goiters. This variation may be partially understood by realizing the difficulty in clinical differentiation of true tumors of the gland from the multiple colloid adenomatous goiters that occur so frequently in the goiter belts.

Many internists have been hard to convince of the danger of malignant changes, because the statistics have too often included all types of nodular goiter; also, if the internis lives in an area where goiter is not prevalent, he has no opportunity to observe malignant tumors of the thyroid in any number, and therefore arrives at the wrong conclusions about the incidence.

For 1,971 consecutive discrete adenomas operated on at the Lahey Clinic the incidence of malignancy was 10.04 per cent; for 1,782 multiple adenomatous goiters, only 0.62 per cent. The discrete adenoma is distinguished by three facts: (1) it occurs as a single tumor; (2) it possesses a definite capsule, and (3) the thyroid tissue inside exists in varying degrees of differentiation.

The authors discuss whether the advisability of removing the adenoma when it is first noted. They conclude that this should be done, since eventually the nodule would enlarge and present a constant danger of cancerous change; thus the smaller the adenoma the greater the reason for removal, since less time would be allowed for exposure to the danger of malignant degeneration. The authors prefer to excise the unruptured tumor locally and await the pathologic report, but they have no disagreement with those who advocate removal of the adenoma by lobectomy. In their opinions, the decision to do a radical dissection of the neck should be based on whether there is blood or lymph vessel invasion and should be made after microscopic examination of paraffin sections. They believe that radical neck dissections should be done in all cases of cancer arising in discrete adenomas, if these have eroded the capsule and involved the parenchyma of the thyroid. They likewise advocate radical neck dissection in cases of malignant change in the discrete adenoma if these are of Grade 2 or Grade 3, adenocarcinoma or small cell or giant cell carcinoma. They do not advocate radical neck dissections for patients who have discrete adenomas with papillary adenocarcinoma and without erosion of the capsule or invasion of the blood or lymphatic vessels.

Grade 1 papillary adenocarcinomas are not given post operative roentgen therapy unless there is extension in the surrounding tissues or lymph nodes. For the other grades roentgen therapy is advocated. In 5 cases the growth was so far advanced when first seen roentgen therapy alone was given, and, while there was not complete disappearance of the tumor, the patients lived and were active for an average of nine and six-tenths years.

Alveolar adenocarcinoma is the most dangerous of all malignant thyroid tumors. In 56 per cent of the cases reported the tumor was entirely within the capsule, yet the five-year survival rate was only 29.1 per cent. For this type of tumor roentgen therapy is begun usually by the sixth day and is planned to cover the tumor bed and the surrounding lymphatics. The treatment is given daily to a total of 4,800 roentgens, with a half value layer of 2 mm. of copper.

Radioactive iodine is used (1) as a tracer to determine whether any tumor tissue remains and (2) as a curative agent for patients who take up iodine in large enough quantities to destroy the tumor. It is used for the most part in the treatment of Stages 3 and 4.

A. H. Letton, M.D.

Costal Chondritis (Tietze's Disease).

Deane, E. H. W.: Lancet 1: 883-884, 1951.

A rather interesting benigh inflammatory lesion of the costal cartilage is described. Although the author suspects that this entity is far more common than the literature would indicate, relatively few cases have been reported since the condition was first described by Tietze in 1921.

The patients present themselves with a painful swelling of the costal cartilages, over which tenderness may be fairly acute. The inflammatory process comes on fairly rapidly, reaching its peak in one or two days and then gradually subsiding over a period of three to four weeks.

The exact cause of costal chondritis is unknown, although infection of the respiratory tract and trauma have been suggested as probable causes.

MEYER O. CANTOR, M.D.

Present Status of the Surgical Treatment of Peptic Ulcer. Glenn, F.: J.A.M.A. 145: 790, 1951.

On the basis of experience with 414 operations for peptic ulcer at New York Hospital between Jan. 1, 1946 and Dec. 31, 1949, Dr. Glenn discusses the surgical treatment of peptic ulcer as practiced in that institution. His indications for surgical intervention are perforation, obstruction, hemorrhage and pain. Since perforation is an emergency and repair thereof is not definitive treatment, it was excluded from this series. The operations used were gastric resection (309 cases), gastroenterostomy (35 cases), and vagotomy either alone or in combination with other procedures (84 cases). The mortality of gastric resection was 1.9 per cent. Gastroenterostomy was used only as a compromise procedure when gastric resection was contraindicated.

In the author's opinion "gastric resection which removes the ulcer and from 65 to 75 per cent of the stomach is the procedure of choice for the surgical treatment of peptic ulcer."

HOWARD S. STERN, M.D.

Synchronous Combined Abdominovaginal Hysterectomy. Howkins, J.: Lancet 1:872-874, 1951.

The author proposes a more radical operation than Wertheim's for certain selected cases of carcinoma of the cervix. The method proposed is to employ two surgical teams: one team works upon the abdomen and the other upon the vagina at the same time. The advantages claimed for the method are: (a) time is saved both at operation and stay in the hospital; (b) the scope of the operation is widened, and (c) the abdominal and vaginal surgeons working in unison greatly simplify those parts of the operation which are most difficult when the entire operation is performed, either from above or from below, by one surgeon.

Since the method proposed is more radical than the classic Wertheim procedure it removes a potential site of recurrence, i.e., the vagina. For this reason the rate of cure should improve, especially in those cases in which the neoplasm has already invaded the vaginal vault. The operation is said to be not difficult, and can be performed as quickly as the classic Wertheim. The bladder and ureters are less likely to be damaged, since in the difficult portion of the operation the two surgeons can assist each other.

MEYER O. CANTOR, M.D.

Carcinoma of the Colon. Lyons C., and Smith, F. W.: J. Med. Assoc. Alabama, 20:353, 1951.

Almost 10 per cent of deaths from cancer are due to carcinoma of the colon. The authors state that this is due largely to late diagnosis. The greatest delaying factor in diagnosis is the difficulty of performing complete colon studies as part of a routine physical examination. Many precancerous lesions could thus be found in young adults. Five per cent of all colon cancer occurs in persons under the age of 40. Women are affected more than men, and the peak incidence is in the sixth decade.

Although the cause is unknown, definitely precancerous lesions are: (1) polyps, solitary and multiple; (2) papillomas; (3) familial polyposis of the colon; (4) chronic ulcerative colitis, and (5) diverticulitis. These lesions are discussed in detail.

Carcinoma of the cecum and the right side of the colon rarely produces obstruction, and, owing to the fact that they remain silent for a long time, they carry a high mortality rate. In every appendectomy in an adult the cecum should be carefully palpated for cancer. Abdominal distress from this lesion is rarely colicky. The most frequent symptoms are anorexia, nausea, vague epigastric distress, fever, intermittent [illegible] and frequently, profound anemia. Loss of weight and strength are common. There are often changes in bowel habit, usually mild diarrhea but occasionally constipation. Pus and occult blood are observed in the stools. A mass can be palpated in 25 per cent of cases. The standard operation is resection of the terminal portion of the ileum, the entire right side of the colon and the right half of the transverse colon. End-to-end ileocolostomy restores continuity of the bowel. Seventy-five per cent of five-year survivals may be expected.

Carcinomas of the left half of the transverse colon, the descending colon, the sigmoid and the rectosigmoid tend to be cicatrizing rather than polypoid. This, plus the solidity of the feces in the left side of the colon, tends to produce obstructive symptoms early. Other complaints are colicky pain in the lower abdominal areas, constipation, blood-streaked feces and intermittent diarrhea following the use of laxatives. Tumors of the transverse colon are frequently palpable, those of the splenic flexure almost never. The diagnosis of cancer of the left side of the colon cancer can usually be confirmed by endoscopic and roentgenologic studies, although air contrast studies may often be necessary. Barium should never be given by mouth in these studies. Surgical treatment is less successful than with the right side of the colon, owing to the earlier tendency toward metastasis to the lymphatics and the neighboring viscera. Lymph-borne and blood-borne emboli carry the tumor into the liver. The surgical approach is usually complicated by obstruction, which must first be relieved by a proximal transverse colostomy to defunctionalize the left colon. A recent and apparently healthy tendency is the resection of the entire left colon, with anastomosis of the transverse colon to the rectosigmoid.

HOWARD S. STERN, M.D.

The Postoperative Use of Adrenal Cortical Extract. Kelso, J. W., and Keaty, C., Surg., Gynec. & Obst. 92:296, 1951.

Studies were made to determine the effect of adrenal cortical extract (lipoadrenal cortex, an extract of hog adrenals) upon the postoperative course of patients and to compare these with controls who had not received this extract.

Interest was focused on the clinical effect of adrenal cortical extract upon patients operated upon during periods of extreme heat and upon those whose rooms are not air conditioned, for the postoperative course of these patients is frequently complicated by rapid onset of a severe febrile reaction, and their critical condition is attributed to heat stress, simulating heat stroke. In addition to the factors of stress, the effects of surgical trauma and the alarm reaction were considered in evaluation of the postoperative course. The subjects of the experiment were 20 unselected women who underwent major pelvic operations for gynecologic conditions, 10 of whom received the extract. The postoperative course of the treated patients was more satisfactory than that of the untreated group. The urinary output was adequate, the sense of well-being was greatly augmented, and recovery was attained without the occurrence of urinary retention and inanition; also, expected postoperative complications were fewer.

RAYMOND GREEN, M.D.

Sponge Biopsy in Office Practice. Gladstone, S. A., J.A.M.A. 145:1238, 1951.

Early curable cancer can be diagnosed only by microscopic examination of an adequate sample of tissue. Sponge biopsy is a form of surface biopsy similar to surgical biopsy. The author bases his report on the results of sponge biopsies performed on over 1,200 patients.

Technic.—Sponge biopsies are performed by firmly rubbing a small piece of suitable sponge material over suspected areas and dropping it into a small bottle of formaldehyde solution diluted 1:10 to insure fixation before drying the tissue elements. The author has worked with two principal types of material or sponges, one of gelatin and the other of cellulose. The sponge recommended is ½ inch square and ⅛ inch thick. These sponges are fixed in paraffin hardened as with other biopsies.

Cancer of the Cervix.—Sponge biopsy of the cervix was applied to a series of 641 women, among whom 16 cancers were found. The diagnosis in each case was confirmed by surgical biopsy or by surgical specimen. Early superficial carcinoma of the cervix formed a soft cellular pliable layer covering the labia and the cervical canal, usually near the external os, off on the sponge.

Cancer of the Rectum.—Sponge biopsies were performed in a series of 32 patients with rectal lesions suspected of possible carcinoma. In 15 of these patients the presence of carcinoma was demonstrated by sponge biopsy. In 14 cases the diagnosis was confirmed by surgical biopsy or surgical specimen.

Cancer of the Mouth.—Sponge biopsies were used in examination of 40 patients presenting oral lesions suspected of being cancer. In 12 cases positive evidence of cancer was shown by sponge biopsy, and all the diagnoses were confirmed by surgical biopsy.

Cancer of the Skin.—Sponge biopsy was applied in 22 cases in examination of lesions of the skin suspected of being cancerous. In

11 cases sponge biopsy showed no indications of cancer. In 6 of these cases sponge biopsy was followed by surgical biopsy, with confirmatory negative results.

The subsequent course in these 5 cases showed no evidence of carcinoma. Of the 11 cases of cancer, the sponge biopsy indicated definite carcinoma in 8 and possible carcinoma in 3. Cancer of the skin does not always present the moist, friable, ulcerating surface that yields the greatest amount of characteristic tissue to the diagnostic sponge. The same obstacles encountered in cases of leukoplakia, hyperkeratosis and nonulcerating lesions of the mouth may also be found in the skin.

GILBERT F. DOUGLAS, M.D.

Investigation of the Paramecium Toxicity Test for the Detection of Human Malignant Tumors. Egan, R. W., Cancer 3:26, 1950.

The paramecium toxicity test is based on the comparison of survival rates and the rates of fission of certain paramecia in the dilute serum of normal patients as compared to that of patients suffering from malignant tumors. The author, using a single clone of P. caudatum, studied the serum of 92 patients. Twenty-two specimens were from persons with histologically proved malignant disease; 25 were from patients with proved benign lesions; 29 were controls from healthy adults; and 16 were from supposedly normal adults, run as "unknowns" and compared with the control group.

The average increase of the organisms in twenty-four hours in serum from 25 patients with nonmalignant lesions was 75 per cent; in normal serum, 56 per cent; and in the serum of the 22 patients with malignant tumor, 5 per cent. Since the rates of assimilation and multiplication of the paramecia vary from day to day under standard laboratory conditions, no conclusions could be drawn from the effect of any single serum. The author concludes that the contention of Roskin and Nastiukova—that serum from cancer patients contains a factor that is toxic for P. caudatum—has been borne out. He reports that in his group of 63 unknown cases a correct diagnosis was made in 56, or 89 per cent. The author feels that more intensive study is necessary to establish the specificity of the reaction and its clinical value as an adjunct to the detection of malignant tumors in man.

HOWARD S. STERN, M.D.

Intravenous Procaine as an Adjuvant to General Anesthesia: A Preliminary Report. Tayor, I. B.; Stearns, A. B.; Kurtz, H. C.; Henderson, J. C., and Sigler, L. E., Anesthesiology 11:185, 1950.

Dr. Taylor and his associates present the results of 211 administrations of intravenous procaine hydrochloride during general anesthesia. The technic included administrations of a 1 per cent solution of procaine in 5 per cent dextrose or saline solution. General anesthesia was induced with the agent of choice and the intravenous procaine solution started at 40 mg. per minute for the average adult. The range of administration was 10 to 60 mg. per minute.

Thoracic operations predominated, and procaine seemed especially beneficial; it also proved valuable for thyroid and orthopedic operations, in which reflex stimulation is a great problem.

The beneficial effects to be noticed from the use of intravenous procaine in general anesthesia are as follows: 1. The cough reflex is depressed. 2. The method is relatively effective in preventing cardiac arrhythmia. 3. Sweating is depressed. 4. The respiratory tract is usually very dry. 5. Recovery from anesthesia is quiet, rapid and without excitement. 6. There is postoperative analgesia, varying from twenty minutes to several hours. 7. Intravenous procaine is helpful in maintaining light anesthesia with a general anesthetic drug.

The disadvantages of this procedure are: 1. The possibility of circulatory depression. This is the most severe hazard yet encountered. It is particularly dangerous in that there is no warning sign and the fall may be very rapid. To prevent this hypotension, slow administration, not over 40 mg. per minute, should be used. 2. Respiratory arrest. This occurs at almost the same time as circulatory cessation. It should be treated promptly by manual inflation. 3. Sensitivity may exist. 4. The possibility of delayed reaction or toxicity to parenchymatous organs. These have been neither demonstrated nor ruled out.

The use of intravenous procaine in general anesthesia has its clinical applications, but, as the author states, more work is necessary to answer many of its problems, and it definitely requires cautious and continuous observation by one experienced in anesthesia.

VERNON N. BALOVICH, M.D.

The Prevention of Some Postgastrectomy Difficulties by a New Gastrectomy Technic. Steinberg, M. E., Rev. of Gastroenterol. 18:193-202, 1951.

Basing his observations upon a personal experience of 610 gastrectomies, the author discusses the mechanism responsible for some of the annoying side-effects associated with partial gastrectomy. A mortality rate of 1.3 per cent for this series of cases indicates that, at least in the author's hands, this operation is a safe procedure.

Although partial gastrectomy is now safe for the patient so far as life is concerned, it may be associated with such undesirable side-effects that the benefits of removal of the ulcer are often outweighed by the discomfort due to these side effects. It is in an effort to reduce the incidence of this discomfort and to correct such side-effects once they appear that the author has devised his "pantaloon" operation.

The postgastrectomy difficulties are divided into six fairly well defined groups: 1. Inability to take regular meals because of reduced stomach capacity. 2. Dumping syndrome, characterized by palpitation, cold sweat, dizziness, belching and even syncope appearing shortly after meals. The various theories of causation are discussed, but no specific causative factor is pointed out. 3. Diarrhea and steatorrhea, observed occasionally as a result of jejunitis, altered bacterial flora, lack of fat absorption or increased intestinal motility. 4. Symptoms of hypoglycemia one to two hours ofter meals. 5. Deficiency syndrome from malnutrition. 6. Bilious regurgitation and vomiting with gastritis, often associated with gastric hemorrhage.

The "pantaloon" operation was designed chiefly to prevent the deleterious effects due to regurgitation of pancreatic juice and bile into the gastric remnant and to prevent the disabilities associated therewith. The efficiency of this new procedure is exemplified by 7 case reports. All of the patients were either completely cured or greatly improved after revision of the conventional gastrectomy by the pantaloon procedure. The operation has been performed by the author on 127 patients, with good results.

In a discussion of this paper by B.O.C. Pribram, the mechanism responsible for the dumping syndrome is spoken of as not always being due to "blitz emptying" of the gastric remnant. The reflux of gastric secretion and material ingested into the proximal jejunal loop is thought to cause a second group of clinical syndromes. Enteroanastomosis is the method used to prevent the reflux or to treat those patients in whom this vicious cycle has already occurred. Since the conventional gastrectomy is satisfactory in 85 per cent of all operative cases, Pribram believes that it should be continued, but that the "pantaloon" procedure should be used for the 15 per cent of patients in whom these undesirable side effects occur. Vagotomy associated with local excision of the ulcer is proposed as the treatment of choice for cases in which vagotomy and gastroenterastomy are indicated.

MEYER O. CANTOR, M.D.

The Myrmecia. Lyell, A., and Miles, J. A. R., Brit. M. J. 1:912, 1951.

The authors have studied the occurrence inclusion bodies in warts. They have found such bodies in some warts: these they call Type I (inclusion) warts, in order to distinguish them from Type B (banal) warts, which have a commonplace histologic character devoid of inclusions.

The inclusion bodies are eosinophilic and are both intracytoplasmic and intranuclear. They appear first in the lowest layer of prickle cells, and their development can be followed into the stratum corneum.

The distinction between Type B and Type I warts is clinical as well as histologic. Type I warts are usually plantar, palmar, subungual or paronychial; they are painful and often associated with inflammation of the surrounding skin; they are deeply set in the skin and form dome-shaped swellings; when they are curetted they prove to be larger than appears on the surface, and their substance is opaque, white and soft. Type B warts are more superficial and lie in a saucer-shaped depression, showing typical warty excrescenses with tough horny crowns. Type I warts are curetted deeply for removal, in contradistinction to warts of Type B. There are some intermediate and mosaic types of warts. There is still some uncertainty as to the relationship between Type I and Type B warts.

The authors also suggest that the name "verruca vulgaris" be confined to Type B warts, and that warts of Type I be renamed "myrmecia", since such a wart is the same entity as the myrmecia of Celsus.

CHARLES C. ABBOTT, M.D.

Choice of Conservative or Surgical Treatment in Bleeding Peptic Ulcer. Pedersen, J., Lancet 1:1292-1295, 1951.

A group of 317 patients admitted to the Bispebjerg Hospital in Copenhagen, treated over a ten-year period for massive upper gastrointestinal hemorrhage, were studied to determine the best form of treatment. The problem was whether the treatment should be (1) conservative, (2) surgical or (3) surgical after trials of the conservative.

As a result of this study, the author concluded that no one form of treatment can be applied to all cases. Age was considered an important factor in deciding whether surgical intervention was indicated and, if so, when it should be done. In the 50-70 age group, immediate operation was desirable after the first hematemesis in the hospital. This applies unconditionally to all cases in which hematemesis is accompanied by hemorrhagic shock or in which the patient has severe pain or pyloric stenosis. Immediate surgical intervention is also recommended in other cases of hematemesis in the hospital when the diagnosis of chronic peptic ulcer is regarded as certain or highly probable. In the 40-50 age group operation should be done immediately after the first hemorrhage only if the patient fulfils several of the absolute criteria. For patients under 40, operation is considered only in exceptional cases and only after lengthy conservative treatment. For patients 70 years old or older, operation cannot be recommended as a routine, because of the high mortality rate. If surgical intervention is done, however, it should be done immediately after the first hemorrhage.

The surgical treatment of bleeding peptic ulcer is being studied further in Copenhagen along the lines indicated.

MEYER O. CANTOR, M.D.

Salicylates, Antipyrine and Ascorbic Acid and Anti-Allergic Substances. Gohar, M. A., and Makkawi, M.: J. Royal Egypt M. A. 34:110, 1951.

Accepting the premise that rheumatic fever is an allergic response to hemolytic streptococci, the authors seek to prove experimentally that sodium salicylate is of value in this disease because of its antihistaminic activity.

Rabbits previously given injections of sodium salicylate survived the previously determined M. L. D. of intravenous histamine hydrochloride, while the untreated controls died.

In a second experiment, involving rabbits previously sensitized to horse serum, those animals survived which received intravenous sodium salicylate prior to receiving intravenously the massive anaphylactic dose. The untreated controls succumbed to the anaphylactic dose of serum.

In a third experiment sodium salicylate was shown to prevent the Arthus phenomenon which appeared in the untreated controls.

Antipyrine, ascorbic acid and a recognized antihistaminic compound, antistine, were similarly tested. All items were found to protect rabbits from histamine and from anaphylactic shock, although the dose of ascorbic acid required was relatively excessive.

THOMAS WILENSKY, M.D.

The Eighth International Assembly
of the
International College of Surgeons
will be held in
Madrid, Spain
May 20-24, 1952

In Memoriam

WILLIAM HUGH SPRUELL

M.D., A.I.C.S.

Dr. William Hugh Spruell of Russellville, Alabama, died on June 19, 1951, at the age of 44. A graduate of the University of Tennessee School of Medicine, Dr. Spruell served his hospital internship at the Memphis General Hospital. He was a base surgeon with the U.S.A.A.F. Base Unit at Sookerating, India, for fourteen months and an assistant division surgeon in the Indo-China Division, A.T.C., for one year. Dr. Spruell was on the surgical staff of the Russellville Hospital and the Colbert County Hospital and was chief of surgery at the Franklin County Hospital.

Dr. Spruell was a member of the following medical and surgical societies: the American Medical Association, the Southeastern Surgical Congress, the Aero Medical Society, the Association of Military Surgeons of U.S.A., the Society of Tropical Medicine, the Franklin County Medical Society (past president), the Alabama State Medical Society and the International College of Surgeons.

ALFRED MARION BUDA

M.D., F.A.C.S., F.I.C.S.

On June 4, Dr. Alfred Marion Buda, a 53-year-old Brooklyn surgeon, died in a motor accident. Dr. Buda was graduated from the New York University Medical College in 1920 and took post-graduate studies at the Cook County Graduate School of Medicine in Chicago, the St. John's Hospital in Brooklyn and the New York Post-Graduate Medical School. He served his internship at St. Mary's Hospital in Brooklyn. Dr. Buda was affiliated with St. Mary's Hospital Dispensary as a clinical surgeon, the Brooklyn and Kingston Avenue Hospitals as an associate proctologist, the Bushwick Hospital, and the New York City Municipal Sanatorium as an attending proctologist. For a number of years he taught postgraduate courses in proctology at the Brooklyn Hospital. His practice was devoted entirely to proctologic surgery.

Dr. Buda was a member of the American Medical Association, the New York State Medical Society, the Kings County Medical Association, the New York Academy of Medicine, the American Proctologic Society, the New York Proctologic Society, the Brooklyn Surgical Society, the American Board of Surgery, the American College of Surgeons and the International College of Surgeons.

ROY A. FISHER, JR.

M.D., F.A.C.S. (JR.), A.I.C.S.

Dr. Roy A. Fisher, Jr., 37, of Knoxville, Tennessee, died on April 30, 1951. Dr. Fisher was graduated from the University of Tennessee Medical School and served as an intern at the following hospitals: John Gaston Hospital, Memphis, Tennessee; Mercy Hospital, Pittsburgh, Pennsylvania, and St. Margaret's Memorial Hospital, Pittsburgh, Pennsylvania. He assisted Dr. H. Dewey Peters of Knoxville for two years and was later affiliated with the Knoxville General Hospital. During 1942 and 1943 Dr. Fisher was an instructor in anatomy and physiology at the University of Tennessee. His practice was devoted largely to general surgery.

Dr. Fisher held memberships in the American Medical Association, the Knox County Medical Society and the Tennessee State Medical Society. He was a Junior Fellow of the American College of Surgeons and an Associate Fellow of the International College of Surgeons.

ATILA BARREIRA DO AMARAL

M.D., F.I.C.S.

On August 3, Dr. Atila Barreira do Amaral, prominent gynecologist and obstetrician, died at Sao Salvador, Brazil. Dr. Amaral was elected to the National Congress in 1934 as deputy and in 1945 became senator. Dr. Fernando Luz Filho, Regional President of Bahia and member of the Board of Trustees, spoke at the funeral, praising Dr. Amaral's human qualities and the high integrity of his professional standards. The officers and members of the International College of Surgeons extend their warmest sympathy to the bereaved.

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Original Articles

Medullary K-Nailing of Humerus to Spine of Scapula For Arthrodesis of Shoulder

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VARIOUS methods of securing an arthrodesis of the shoulder have been described in the past, requiring four to six months' external fixation, usually in a plaster cast.[1] By the use of an intramedullary nail as hereinafter described, external fixation can be discarded as soon as the surgical scars mature, generally a matter of three weeks. Obvious advantages are the patient's comfort and the economy obtained by elimination of several months' follow-up treatment in casts. More desirable is the fact that the majority of arthrodeses are performed for residuals of infantile paralysis, and the months in a plaster cast formerly necessary to obtain an arthrodesis often added serious disuse atrophy to muscles already below par.

It has also been taught that some degree of maturity of the patient should be obtained before attempting a shoulder arthrodesis, as the bony structures involved in children are principally cartilaginous and do not fuse kindly. Hence, in the past an age of 12 years was required before fusions were considered. With the method here discussed the nail provides adequate immobilization for the patient to carry on daily use until a fusion occurs, sometimes a matter of several years. It is now possible to give a 6-year-old child the benefit of a shoulder arthrodesis that creates a functional demand on the extremity, stimulating growth and preventing serious degrees of shortening.

Arthrodesis of the shoulder is preferred to arthroplasty of the shoulder and is indicated in the presence of the following conditions:

1. Deltoid paralysis with reasonably fair scapular muscles, particularly the upper trapezius.
2. Loss of continuity of the glenoid a humerus, as in fracture dislocatio formerly treated by [illegible] of t

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Read at the Sixteenth Annual Assembly of the United States Chapter, International College of Surgeons, September 10, 1951.

Submitted for publication *August 8, 1951.*

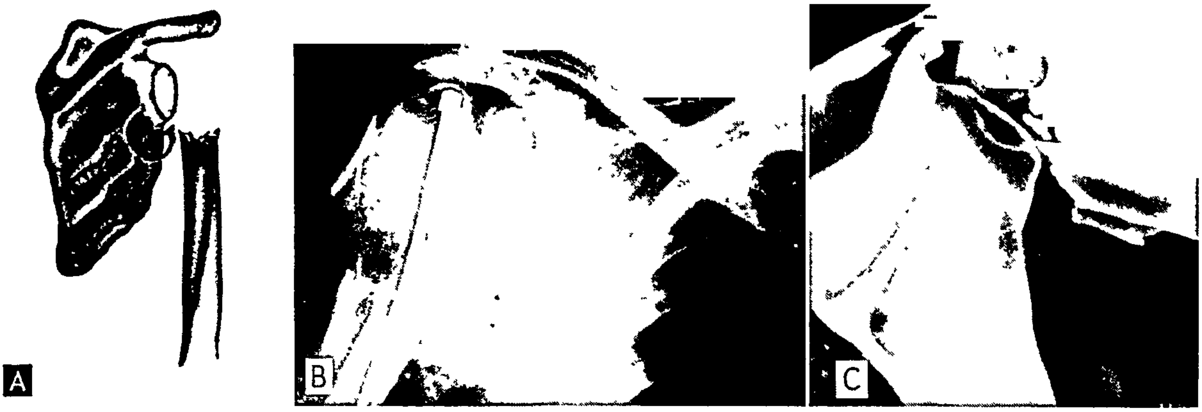

Fig. 1.—*A*, fracture-dislocation of the shoulder. *B*, avascular necrosis after imperfect open reduction with internal fixation. C, roentgenogram taken after treatment by excision of humeral head.

humeral head; total avulsions of the rotator cuff,[2] or resectable tumors in this region (Fig. 1).

3. Painful, degenerative articular states (Fig. 2).

4. Tuberculosis of the shoulder joint.[3]

The operative steps are simple enough for one familiar with the use of K nails in the femur, but the method is not recommended for an untrained team with minimal equipment. The K nail is introduced in a retrograde manner, much as for a fracture of the femur with retrograde nailing. The length of the nail is determined by direct measurement prior to operation; it is measured from the base of the spine of the scapula to the distal humeral metaphysis, and 2.5 cm. is subtracted to allow for shortening created by resection of the humeral head. The length has varied from 24 to 30 cm. The smallest diameter of the humeral shaft is measured teleroentgenographically to determine whether the humerus will carry an 8-mm. cloverleaf nail. Thus far no nail of smaller diameter has been used, although conceivably a 6-mm. nail may be desirable for small children. The incision (Fig. 3) parallels the general axis of the spine of the scapula, extending longitudinally and distally on the arm 8 or 10 cm. Since the function of the deltoid is to be supplanted by the arthrodesis, a direct approach through this muscle, or its fibrous remnants, to the shoulder joint is permissible. The shoulder anastomosis is a minor source of bleeding and is best handled by electrocoagulation. The posterior humeral circumflex artery is the only major vessel encountered and is generally ligated. The arm is brought into tentative alignment with the scapula at the recommended angle of 80 degrees abduction and 30 degrees forward flexion, and the humerus rotated so that the hand presents to the mouth. Fortunately, the anatomic axis of the spine of the scapula and the long axis of the humerus, when aligned with each other, approximate these desired angles. The humeral head is then properly beveled with a power saw (Fig. 4). The obturator, or guide for the K nail, is then driven from the center of the glenoid to a point of exit near the base of the spine of the scapula. Economy of cutaneous incisions is generally obtained by a second counterskin crease incision paralleling the vertebral border of the scapula, permitting emergence of the obturator and the drilling of a scapular tunnel (Fig. 5). The selected K nail is started through this tunnel, the obturator reversed, the cartilage of the glenoid excised, and the obturator driven across the proximal humeral metaphysis and down the medullary cavity of the humerus (Fig. 6). This step is generally checked by multiplane fluoroscope. The K nail is then driven home, so that its distal end is in the distal metaphysis of the humerus (Fig. 8). Shorter positioning of the nail, so that it ends somewhere in the medullary canal of the humerus rather than in the distal metaphysis, does not create maximum stability. Further, if the nail is to be left in permanently, for reasons which will be dealt with later, failure of the end of the nail to reach the metaphysis creates a stress potential in a tube, which may predispose to a later fracture.

It is much better for the nail to end in the distal metaphysis, which structurally is designed to transmit stresses and strains. The depth of the nail in the distal metaphysis is, therefore, carefully checked by a roentgenologist by means of the multiplane fluoroscope. When it is satisfactory, the caudal half of the acromion is turned down as a bone flap and locked in a bone slot on the dorsum of the humerus (Fig. 7), after the manner of the Gill[1c] or the Watson-Jones procedure.[1g] This may be reinforced with bone chips.[1c]

In closure of the shoulder joint the capsule and fibrous remnants of the deltoid form a strong flap, which has been so lengthened by the necessary joint resection that the flap may be attached well over the acromion, creating a strong reinforcing ligament. The superficial fascia and skin are closed conventionally. Postoperatively the shoulder may be supported for comfort in a spica cast or an abduction splint, or may be placed in balanced traction, until maturation of the scar tissue, a matter of three weeks. At the

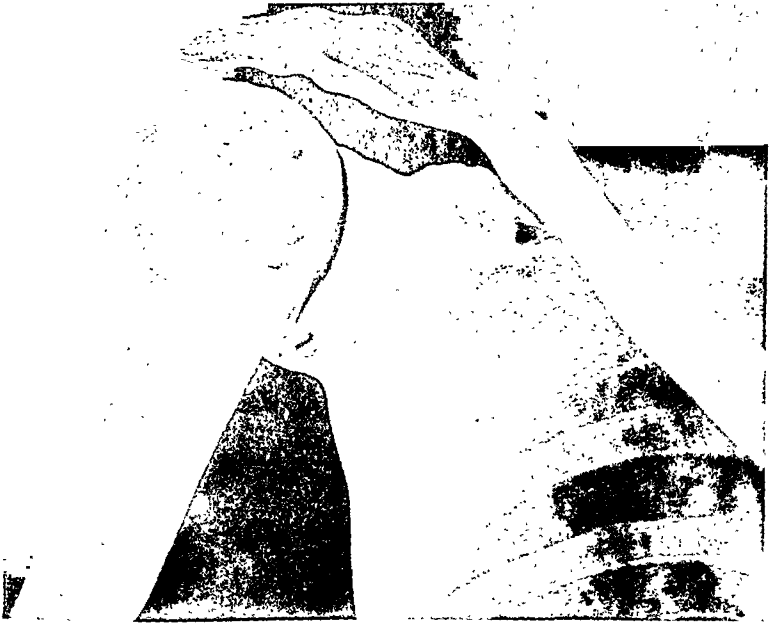

Fig. 2.—Malum articulorum senilis.

end of this time a platform splint may or may not be used as an adjunct until the shoulder girdle adapts itself to its new load. Physiotherapy is not generally used.

As will be seen from the case reports, bony arthrodesis takes place slowly, over many months or even years; therefore the intramedullary nail must be left in for a long time. Leaving the nail in indefinitely is also advisable from another standpoint. In some cases of infantile paralysis the humerus is no longer protected by an investment of muscle (Fig. 9), and minor trauma may produce a fracture of the humeral shaft, which might not have occurred with a nail reinforcing the shaft.

This operative procedure has been performed in 6 cases, which are here reported. An adult, a youth and a child are representative patients from each age group, and their cases are presented in detail, with roentgenograms.[*] Thumbnail sketches of the other 3 cases are also included as a matter of record.

REPORT OF CASES

CASE 1.—M.M., a boy aged 6, had deltoid paralysis one year after poliomyelitis, with flail shoulder and elbow and poor muscular power in the forearm, so that the hand was not of much use. The scapula was stable. A K-nail arthrodesis was performed on Aug. 21, 1950. A shoulder spica was applied and worn for three weeks after the operation. There was partial bony arthrodesis after one year (Fig. 10). Excellent use of the extremity has been developed. A trace of biceps has developed elbow flexion. Elbow extension is still by gravity only. There has been a surprising redevelopment of the forearm, wrist and hand, which have reached an almost normal status. The proximal epiphysial plate of the humerus, through which the K nail still passes, has closed. There is no additional shortening of the arm. Excision of the clavicle was performed as a supplementary operation on July 9, 1951, with increase in range of motion of the shoulder girdle.

CASE 2.—F.F., a man aged 39, with flail left shoulder (a residual of infantile paralysis in childhood), had been treated by his family physician for angina pectoris over a period of several years before a consulting cardiologist ruled out heart disease and requested arthrodesis of the shoulder to eliminate mechanical drag of the neurovascular bundle of the arm.[4] An abduction splint was worn by the patient for three weeks to determine whether some such procedure would give him relief. Improvement with regard to pain was reported after this test period. The scapular muscles were excellent. Intramedullary K-nail fixation of the humerus to the spine of the scapula, with the shoulder at 80/30, was performed on Sept. 6, 1949. The excised humeral head was converted into an acromiohumeral graft maintained in position with two threaded wires (Fig. 11*A*). The immediate postoperative period was marked by the development of stretch paralysis of the ulnar and radial nerves, the ulnar nerve, which has the longer course, being the more affected. This was accompanied by considerable pain, unrelieved by various conservative measures. Anterior transposition of the ulnar nerve was performed on October 5, one month after arthrodesis, by the neurosurgical staff, with improvement provided the arm was supported with an abduction splint. Attempts to get the arm down to the side and out of the abduction splint were always blocked by pain and by some return of paralysis in the hand. Two months after the original operation, the K nail was withdrawn and the angle of the arthrodesis forcibly broken down to about 60 degrees of abduction. This relieved the pain. The radial nerve paralysis recovered completely. Ulnar sensation returned. There is still ulnar motor weakness in the hand after two years. This is the only case in this series in which the nail has been withdrawn. Roentgenograms taken twenty-two months after operation showed that a solid bony arthrodesis had resulted (Fig. 11*B*). Excellent use of the arthrodesed shoulder has been developed by the patient. The old "heart pain" is gone, and the patient is able to sleep at night without sedatives.

CASE 3.—C.W., a boy aged 12, had flail right shoulder and elbow for two years after an attack of poliomyelitis. The trapezius was good and the scapula stable, but the rhomboids were poor and the pectorals absent. The right arm groups were all recorded as absent, and one consultant had advised an

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[*] When this paper was presented at the Assembly in Chicago, colored motion pictures taken at one-year or two-year follow-up examinations, demonstrated the results far more effectively than they can be presented by the halftone still pictures accompanying this article.

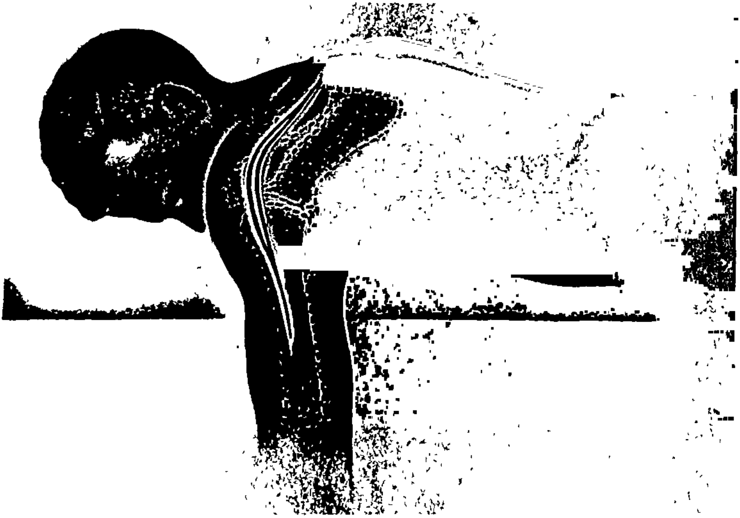


Fig. 3.—Incision for K-nail arthrodesis of the shoulder. This parallels the general axis of the scapular spine, extending longitudinally and distally 8 or 10 cm. on the arm.

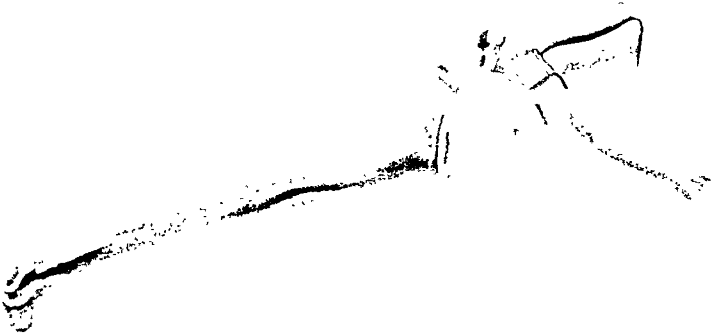


Fig. 4.—Joint contoured.

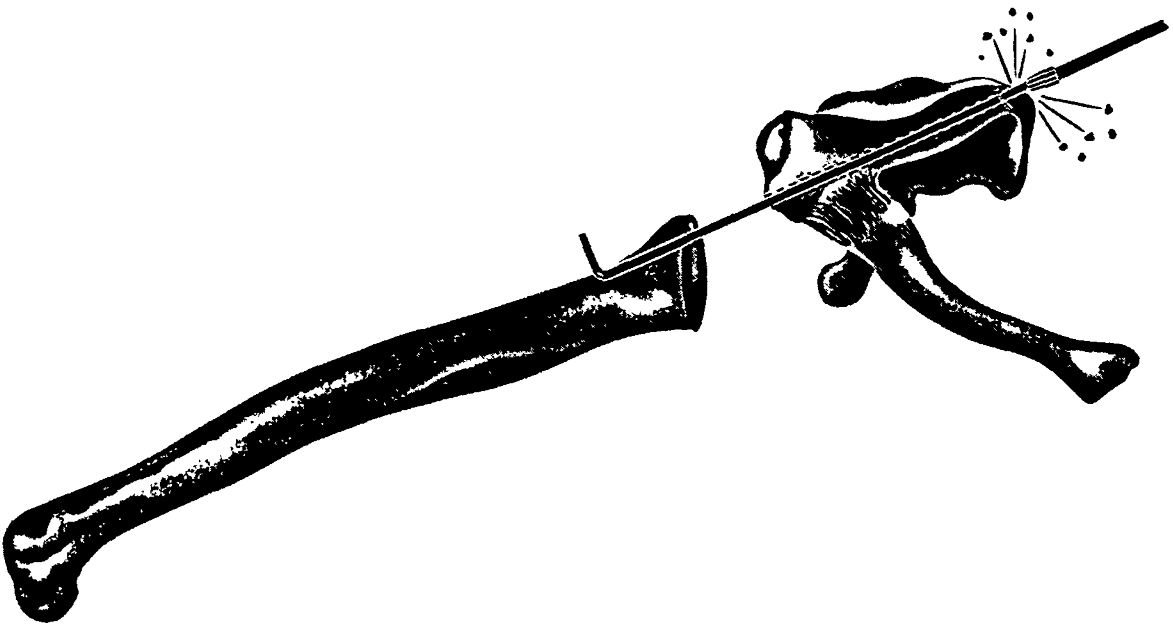


Fig. 5.—Scapula tunneled.

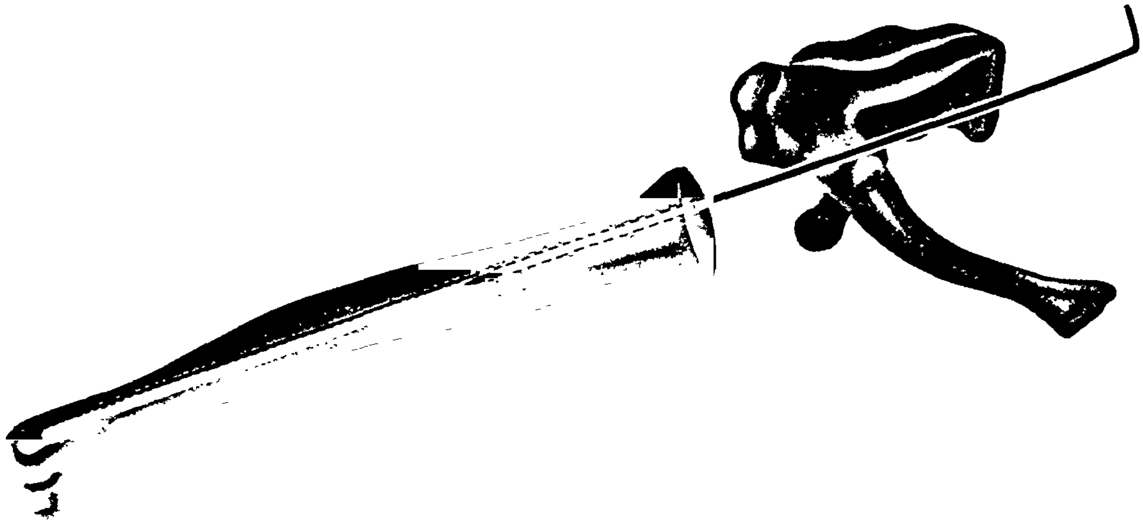


Fig. 6.—Obturator centered in humerus.

elbow transfer to procure some flexion. The forearm and hand were fair in power, save for pronation. On Dec. 2, 1947, a roentgen comparison of the two shoulders revealed a decrease in the space between the epiphysis and the diaphysis of the upper part of the right humerus, probably indicative of early union of the epiphysis. There was also some disuse demineralization of the shoulder girdle. A K-nail arthrodesis was performed on Dec.

17, 1949, by Dr. C. W. Thomas and myself. Postoperatively the boy was placed in balanced traction for three weeks and discharged in four weeks, using his shoulder without support. He failed to report to the clinic for follow-up. A social service check reported that the family had left town. Eighteen months later he was traced to a Kansas farm, where follow-up revealed the following data: The arthrodesis was solid (Fig. 12), the nail continuing in place and innocuous. There was excellent range of motion and power for an arthrodesed shoulder. Instability of the acromioclavicular joint was developing from stress; the biceps had developed sufficiently to move the elbow to the mouth. The hand and wrist were almost normal. There was no additional shortening. Roentgenograms showed that the proximal humeral epiphysis, across which the K nail traverses, was still open. An excision of the clavicle was performed on June 8, 1951, to restore this shoulder to universal joint status. (Fig. 13). This procedure enabled the boy to put his hand in his pocket, bring his elbow to his side, and throw a baseball overhand (Fig. 14).

Case 4.—J. S., a boy aged 12, had deltoid paralysis following poliomyelitis. The scapular muscles were poor, except for the trapezius.

A K-nail arthrodesis was performed and was successful. A two-year follow-up revealed upgrading of the weak elbow and forearm group. There was marked improvement in the hand. Excision of the clavicle, as a supplementary procedure, was performed May 16, 1951, with increase in range of shoulder motion. The patient can now get his hand into either front or back pockets.

Case 5.—A.H., a girl aged 12, had deltoid paralysis for three years after poliomyelitis. The arm was otherwise excellent. A K-nail arthrodesis was performed on June 21, 1951. The patient is now able to use the arm. Roentgenograms indicate that a bony arthrodesis will result, though it is too early to state the final result.

Case 6 (courtesy of Dr. Charles B. Thomas).—L.V., a woman aged 50, had a painful pseudarthrosis of the shoulder.[5] A successful arthrodesis was performed with the K-nail technic, after a previous attempt by another method had failed. Her pertinent medical history was as follows:

After three years of trial with a recurrently dislocating right shoulder, an unsuccessful Nicola procedure was performed in 1946. Two years later an arthrodesis of this shoulder was attempted. Two vitallium screws were inserted through the head of the humerus into the glenoid, with six months' postoperative immobilization in a plaster cast, after which time bony union was not achieved. A K-nail arthrodesis was performed in March 1950, reinforcing iliac grafts being used in addition to the usual procedure. Bony union was roentgenologically evident in four months.

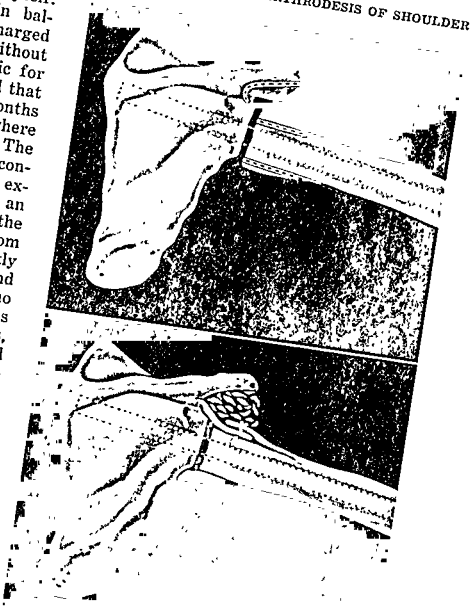


Fig. 7.—Interlocking grafts.

COMMENT

In following this small series of shoulder arthrodeses, several items are worthy of discussion. We have had to make some decisions for lack of precedent, and we wish to record our current opinions and observations on some points at this time.

1. As to leaving the nail in, we co

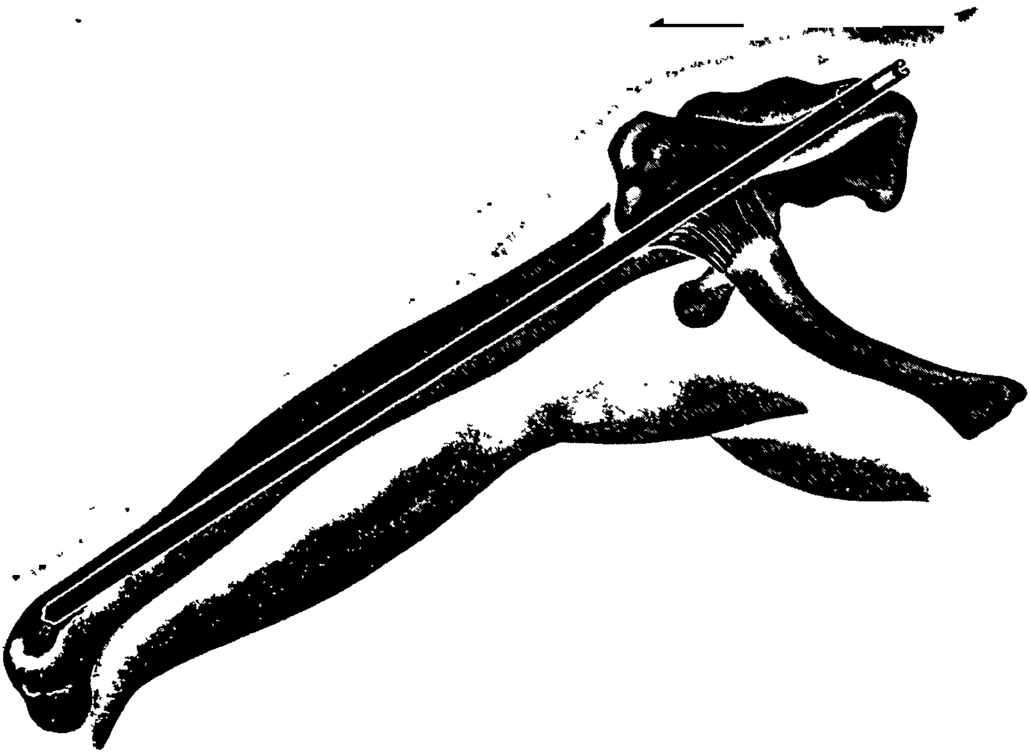
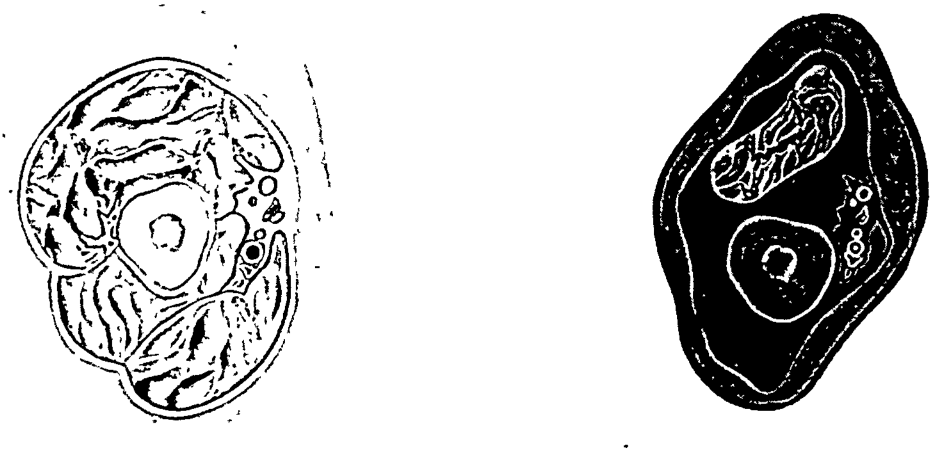


Fig. 8.—Nail in place. Note that nail extends to distal metaphysis to insure stability and to prevent stress fracture.



NORMAL ARM

PARALYZED ARM

Fig. 9.—Cross sections of normal and paralyzed arm. The nail is left in permanently in arms lacking protective musculature but may be removed in the presence of normal muscles.

sider it advisable for victims of severe poliomyelitis, paralysis of whose arm groups deprives the humerus of its normal muscular protection (Fig. 9). We know of 2 instances of fracture of the humerus following arthrodesis by other methods. In the presence of normal arm musculature the nail may be removed.

2. As to growth disturbances, the "dangle arm," giving promise of severe shortening by maturity, gets a much better growth stimulus from the increased function of a successful arthrodesis. This follows from Wolff's law, as well as from recent studies of Barr, Stinchfield and Reidy concerning functional muscle mass.[5] At the time of the initial operations it was felt that the proximal epiphysis of the humerus would be necessarily sacrificed by the K nail's transfixation. This is not necessarily the case; of the 4 children treated in this series, 3 show roentgen evidence that the proximal epiphysis of the humerus is still open (Fig. 12).

3. A successful arthrodesis of the shoulder is analogous to a successful stabilization of the foot with regard to its effect on other joints of the extremity. Successful foot stabilization often upgrades the knee and hip motors to an extent that offers freedom from a brace. Shoulder arthrodesis goes a step farther, in that gravity can be brought to the aid of impaired elbow and hand motors instead of continuing to act as a degrading force. For example: a biceps humerus, graded "poor" before arthrodesis, will be upgraded by two factors; the aid of gravity in certain positions which the patient rapidly learns, and the fact that the number of joints it is required to move has

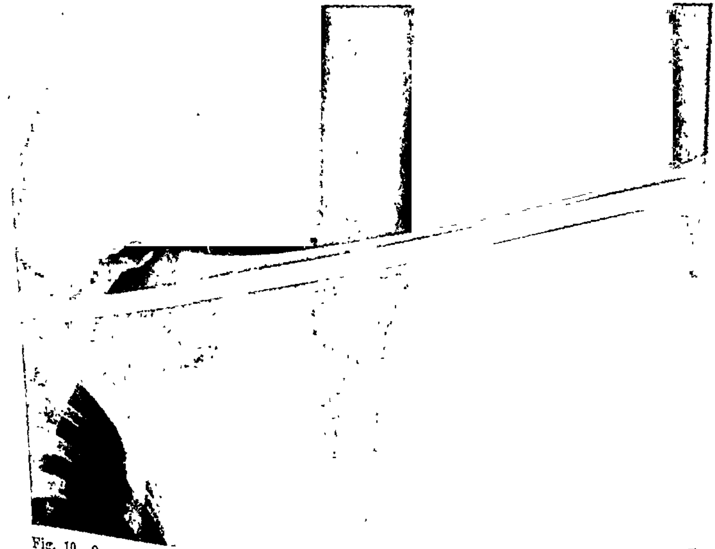


Fig. 10.—One year after nailing. Arthrodesis not yet complete in a 5 year
solidation will require eighteen months.

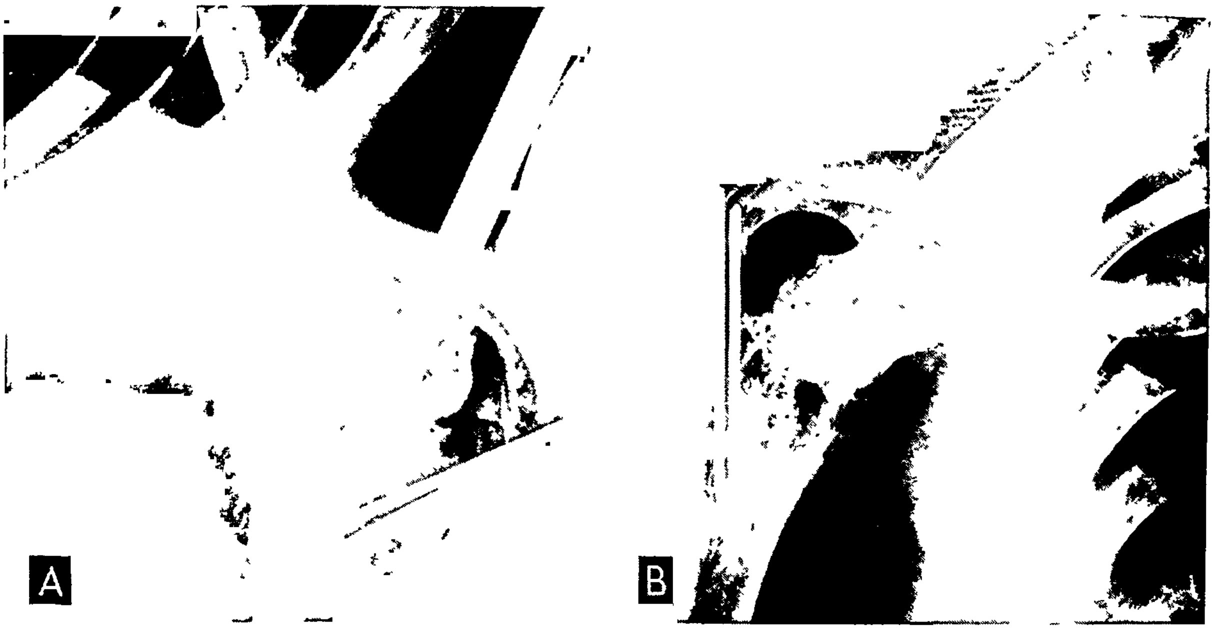


Fig. 11.—*A*, postoperative film, lateral view in coronal plane. *B*, film taken two years later. Nail removed.

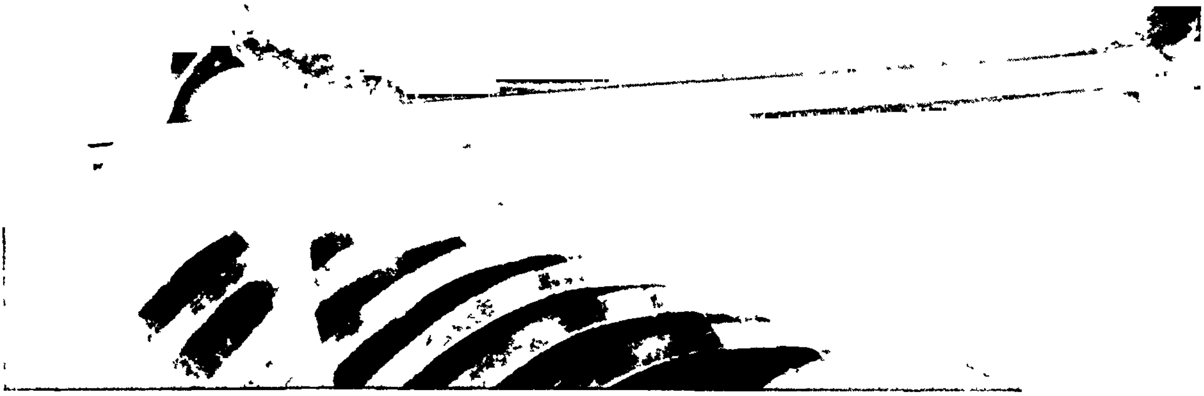


Fig. 12.—Bony arthrodesis in a 12-year-old boy after fifteen months. Note that the epiphysial plate is still open.

obviously been reduced from two to one.

4. In spite of all the advantages herein outlined for arthrodesis of the shoulder, the procedure results in an awkward attitude of the extremity. The arm and elbow are apt to "stick out like a sore thumb." Fracture of the humerus (for want of body clearance) is probable. Laxity of the clavicular articulations develops with use, pointing to traumatic changes with age. The hand can not be put into a trouser pocket; overarm motions, such as those used normally in throwing a ball, are not possible. ClavicIectomy offers an opportunity to restore an arthrodesed shoulder to a status reasonably near that of a universal joint (Figs. 13 and 14) and has been per-

formed as a supplementary procedure in 3 cases. Claviclectomy, of course, results in an almost immediate increase in range of motion. The clavicle in such a procedure can be regarded as a sesamoid bone like the patella, and the important point for consideration in its removal is careful repair of the muscular-ligamentous raphe, by which the sesamoid is invested.

It is debatable whether claviclectomy will produce scoliosis in growing children. This has not been observed in cases of ununited fracture of the clavicle.[6] Only 7 total excisions of the clavicle are reported in the literature, none with comment on this point. At present, therefore, our account of claviclectomy as an adjunct to shoulder arthrodesis[5] must be considered a preliminary report, and the ultimate value of the procedure assessed at a later date, when a body of data based on further experience becomes available.

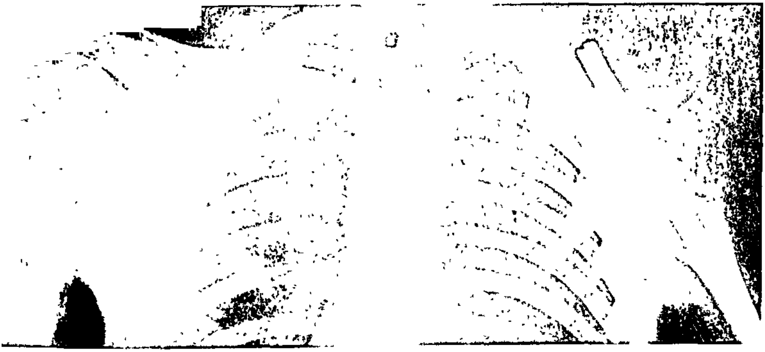


Fig. 13.—Roentgenogram taken one month after claviclectomy.

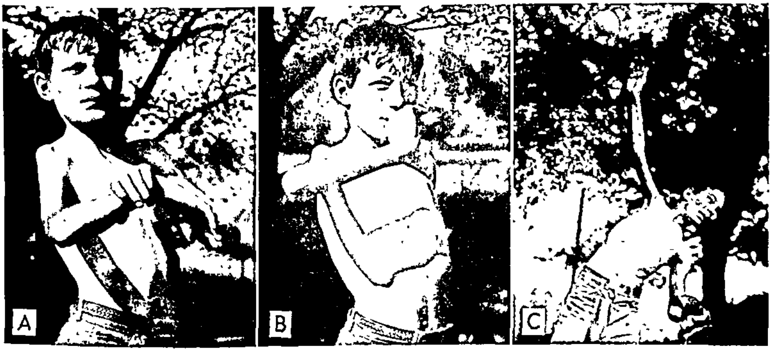


Fig. 14.—*A*, patient demonstrating how he used his arm prior to arthrodesis. *B*, photograph showing maximum elevation obtained after arthrodesis of shoulder. *C*, motion obtained after claviclectomy supplemented arthrodesis.

SUMMARY

1. A method of arthrodesis of the shoulder has been used in 6 cases.
2. It has been successful in 5 cases.
3. The sixth case is not ready for final assessment, at the time of writing the patient is progressing satisfactorily.
4. A preliminary report is made on claviclectomy as a supplementary procedure to arthrodesis of the shoulder.

SOMMAIRE

1. Il s'agit d'une méthode de arthrodèse de l'èpaule employée dans 6 cas.
2. Elle a réussi dans 5 cas.
3. Quant au 6 iéme cas, on ne peut le classer immédiatement. Mais pour le moment il progresse d'une facon satisfaisante.
4. On fait un premier rapport sur l'usage de la claviculectomie comme procédure supplémentaire à l'arthrodèse de l'épaule.

ZUSAMMENFASSUNG

1. Eine in sechs Faellen angewandte Methode zur Versteifung des Schultergelenks wird beschrieben.
2. Fuenf Faelle waren erfolgreich.
3. Der sechste Fall gestattet noch keine endgueltige Auswertung. Zur Zeit der Niederschrift der Arbeit jedoch machte der Kranke befriedigende Fortschritte.
4. Es wird ein vorlaeufiger Bericht ueber die Entfernung des Schluesselbeins als ergaenzendes Verfahren zur Versteifung der Schulter abgegeben.

RESUMEN

1. Se trata de un método de artrodesis del hombro usado en 6 casos.
2. Dicho método ha sido satisfactorio en 5 casos.
3. Sobre el sexto caso no puede hacerse aun la estimación final, pero el paciente se encuentra por ahora progresando satisfactoriamente.
4. Se hace un informe preliminar sobre la claviculectomía como procedimiento suplementario de la artrodesis del hombro.

RIASSUNTO

1. Viene esposta una tecnica di artrodesi della spalla, usata in 6 casi.
2. In 5 casi si potè ottenere un successo completo.
3. Nel sesto caso non si possono fare apprezzamenti quanto all'esito finale ma, al tempo in cui il lavoro veniva scritto, il decorso post-operatorio progrediva in modo soddisfacente.
4. Si espongono note preliminari sulla claviculectomia come procedimento supplementare dell'artrodesi della spalla.

SUMÁRIO

1. Um metodo de artrodése do ombro foi usado em 6 casos.
2. Foi coróado de sucesso em 5 casos.
3. O séxto caso não está pronto para cotejamento final, mas ao tempo em que se escreve o paciente está se recuperando satisfatoriamente.
4. Um relatório preliminar é feito numa claviculectomia como um processo suplementar á artrodése do ombro.

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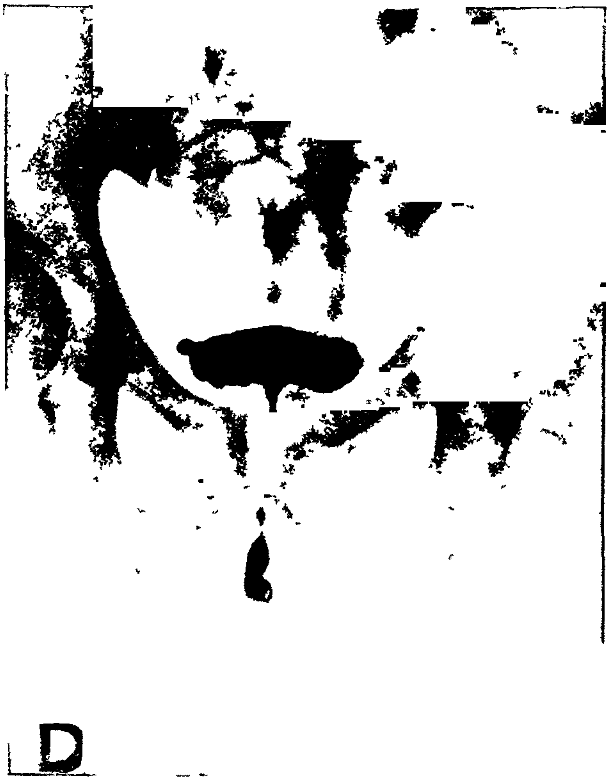

Fig. 2.—Roentgenogram in case represented by Figure 1*B*. The patient suffered perineal pain due to the presence of phleboliths. The concretions were removed without difficulty (see text).

on examination proved to have been caused by a phlebolith (Fig. 5), attached by a fixing peduncle to the venous walls. A middle covering was observed, and the outer one, smaller at any rate, showed strong calcareous deposits. As a result of technical procedures, the central nucleus remained attached by part of the middle covering (Miguel Calvo). In other phleboliths, those corresponding to Figures 3 and 4, no fixing peduncles could be noted, but logically the fact that the pheboliths were concentrated in the interiors of atrophic vessels histologically similar to the former ones—which had already lost all the normal veins through infiltration and sclerosis—must be considered proof that they originated from local sepsis (silent?) of the vessels in which they occurred (Fig. 6).

The patient represented by the roentgenograms Figures 1*B* and 2 and by the photograph Figure 7 suffered some pain in the perineum; therefore it was necessary to remove the phleboliths, which had been detected by systematic exploration —one of our routine procedures in every investigation of illness. On contact with

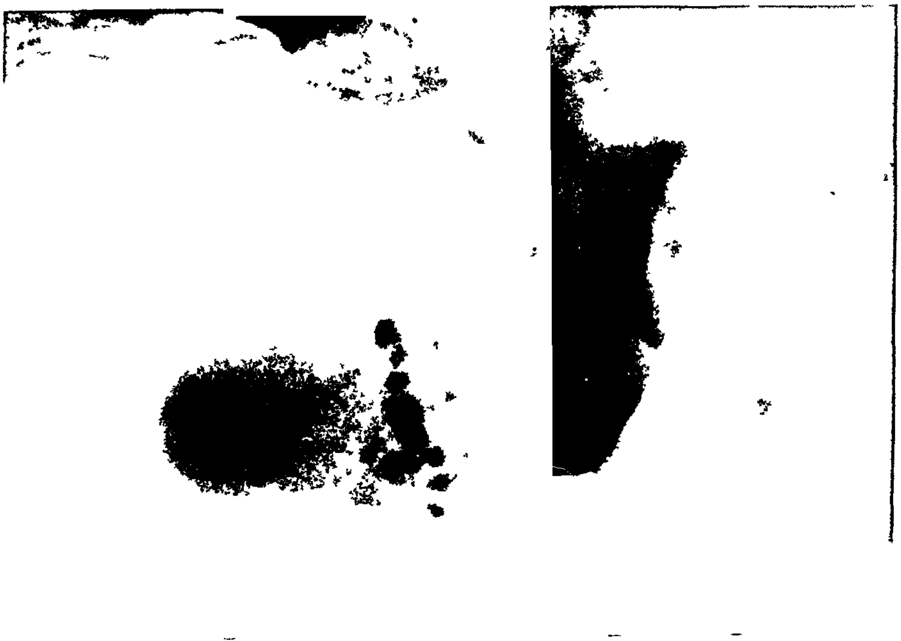

Fig. 3.—Phleboliths of male perineum.

the rectum some hard, grainlike spots were noted *roentgenographically at both* sides of the perineoscrotal zone. These calcifications were confirmed by means of roentgenograms taken according to the impression obtained by examination. A perineal incision had been made, procaine hydrochloride being employed for local anesthesia; under the aponeurosis a vessel could be located which contained the phleboliths and had lost some blood. *The concretions were removed without* any difficulty, and the pain completely disappeared.

The meagre literature that exists with regard to phleboliths furnished the basis for this short article and revealed an iconographic character that is really interesting. Aside from the fact that it is necessary to know the significance of these formations in differential diagnosis, especially with regard to ureteric and vesicular lithiasis as encountered in prostatovesicular procedures, it is worth considering whether phleboliths, in spite of their clinical insignificance, may not be responsible under certain circumstances for clinical manifestations the cause of which is still unknown. In the aforementioned case, at least, a refractory condition existed which obliged us to operate.

Finally, the investigation of phleboliths is important for its relation to vascular pathology, a theme of increasing importance in the surgical field, especially with regard to urologic operations on the prostate gland and the bladder.

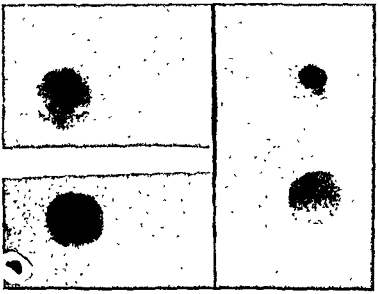

Fig. 4.—Roentgenogram of phlebolith discovered *in sarcoma of shoulder in a child.*

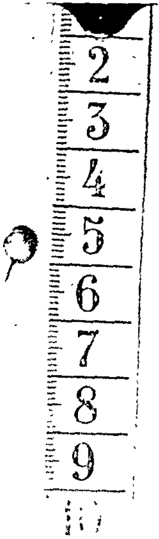

Fig. 5.—Phlebolith removed from sarcoma of child's shoulder, with fixing peduncle by which it was attached to venous wall.

SUMMARY

The author presents a brief discussion of phleboliths, their nature, incidence and roentgen manifestations, illustrated by pertinent roentgenograms and photographs. Material on phleboliths in the literature is relatively scanty, and the author's purpose is to call attention to the fact that knowledge of this condition may have increasing importance in relation to pathologic conditions of the blood vessels. A case is reported in which surgical intervention was necessary and was *successfully performed.*

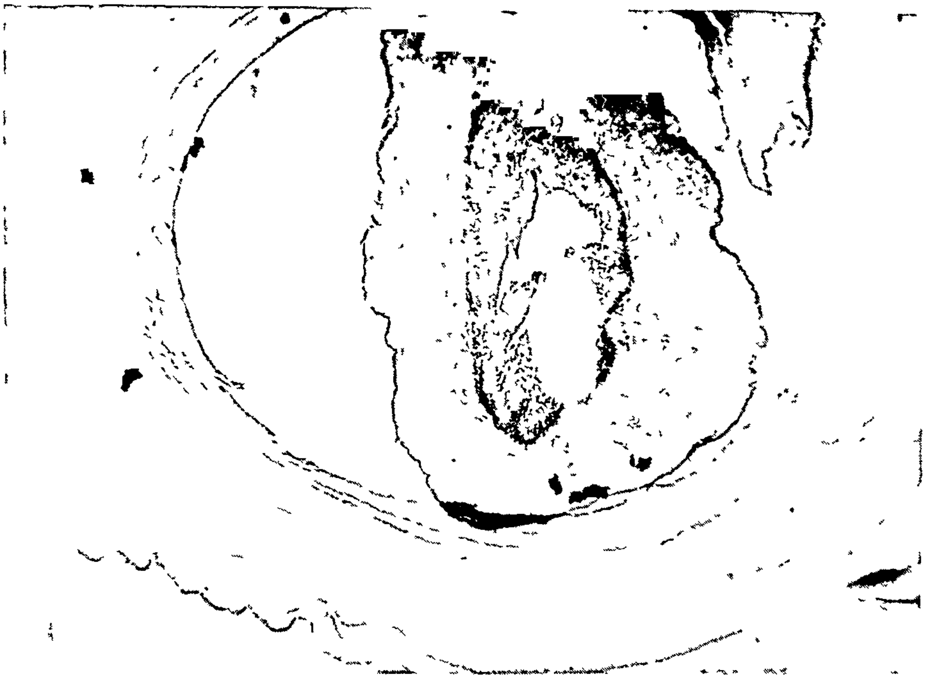

Fig. 6.—Histologic picture.

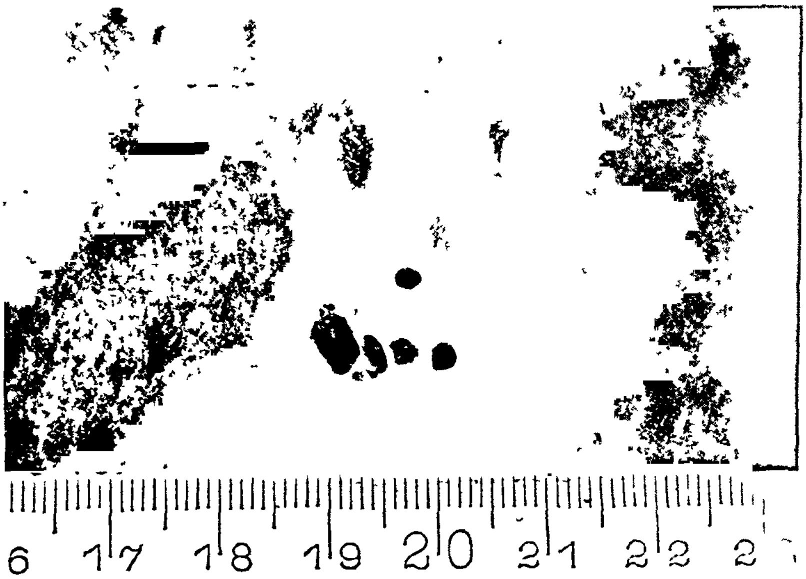

Fig. 7.—Phlebolith detected by systematic investigation. Scale indicates size of calcifications.

RESUMEN

Se presenta una breve discusión sobre los flebolitos, su naturaleza, incidencia y manifestaciones röntgen, ilustrada con rontgenogramas pertinentes. Es relativamente escaso el material sobre los flebolitos en la literatura, por lo que el autor llama la atención respecto a la creciente importancia que puede tener el conocimiento de este estado, en relación con el estado patológico de los vasos sanguíneos. Se da a conocer un caso en que la intervención quirúrgica fué necesaria y satisfactoria.

RÉSUMÉ

L'auteur passe en revue la nature, la fréquence et les manifestations radiologiques des phlébolites avec des clichés à l'appui. Le littérature est pauvre sur le sujet, aussi l'auteur a-t-il l'intention de nous montrer l'mportance du sujet surtout en regard de certaines conditions morbides des vaisseaux sanguins. Un cas à l'appui qui a dû subir une intervention chirurgicale avec succès.

ZUSAMMENFASSUNG

Der Verfasser eroertert kurz die Eigenheiten, das Vorkommen und die Roentgenerscheinungen der Venensteine. Die Arbeit ist mit erlaeuternden Roentgenbildern ausgestattet. Das in der Literatur vorliegende Material ueber Venensteine ist verhaeltnismaessig spaerlich, und der Verfasser beabsichtigt mit seiner Arbeit darauf aufmerksam zu machen, dass die Kenntniss dieser Veraenderungen fuer das Studium der pathologischen Zustaende der Blutgefaesse von wachsender Bedeutung sein mag. Er berichtet ueber einen Fall, in dem ein chirurgischer Eingriff notwendig und von Erfolg begleitet war.

SUMÁRIO

O autor apresenta uma bréve discussão sobre os flebalitos, sua natureza, incidencia e manifestações radiologicas, ilustradas por roentgenogramas. O material sobre flebolitos na literatura é relativamente raro; O intuito do autor é chamar a atenção para o fato de que o conhecimento desta condição póde ter crescente importancia em relação á condicões patológicas dos vasos sanguineos. Um caso e relatado no qual a intervencao cirurgica foi necessaria e coroada de sucesso.

RIASSUNTO

L'Autore presenta una breve esposizione sui fleboliti, loro natura, incidenza e aspetto radiologico, illustrandola con radiogrammi. La letteratura in merito e' scarsa e l'Autore si propone di richiamare l'attenzione sul fatto che una migliore conoscenza in questo argomento puo' illuminare alcune condizioni patologiche dei vasi sanguigni. E' riportato un caso in cui fu necessario un intervento chirurgico che fu seguito da successo.

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Operative Position for Intrathoracic Procedures

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ADEQUATE exposure is of prime importance in any surgical procedure. The two objectives of greatest concern are provision of the best possible exposure for the surgeon and creation of the least disturbance in the physiologic function of the patient. It is axiomatic that the added burden to the patient of providing good exposure for the surgeon, even though it entails longer incisions and lengthened operating time, is more than made up by the ease of the operative procedure, the gentleness with which the tissues can be handled and, in thoracic procedures, the shortening of the intrathoracic part of the operation.

In dealing with intrathoracic organs the approach has to take account of the existing bony framework of the thorax, so that with few exceptions incisions are planned to parallel the ribs. The operative approach cannot be easily changed during operation as in abdominal procedures. An exposure that enables one to deal with almost any intrathoracic problem is greatly to be desired. The length of time necessary to open and close the chest wall structures usually dictates a second, separate operation if the lesion encountered cannot be safely managed through the exposure first obtained.

The two routes of access in frequent use are the anterior and the posterolateral. With the anterior approach the patient lies supine on the table, or perhaps with a small pillow or sandbag under the shoulder of the affected side to permit extension of the incision farther into the axilla. In the posterolateral position the patient lies on the unaffected side, usually over a pillow to spread the ribs on the affected side. In this position an incision can be made along the complete length of the rib from sternum to spine. This is by far the position most frequently used. To overcome certain objections to both of the aforementioned plans, the prone position has become more and more popular during the last six or seven years, since its adoption and emphasis by Overholt and his associates.[1] In this position the patient is supported by the face, the clavicles and the anterior superior spines of the pelvis in such a manner that the entire chest and upper part of the abdomen are exposed and the patient does not bear any weight on them.

Anterior Approach. — As far as the physiologic structure and function of the patient's thorax is concerned, this is a very good approach. The lung on the unaffected side is able to function without embarrassment. The anterior exposure has the added advantage of speed, as it usually takes less time to open and close an anterior incision than a posterior one which traverses the heavy musculature around the scapula. The exposure is adequate for certain procedures, including resection of the right middle lobe. Pneumonectomy in the absence of extensive adhesions is easily accomplished by this route. It is also to be preferred for the Blalock operation of subclavian anastamosis of the pulmonary artery. There are disadvantages to the approach, however, that strictly limit its usefulness. An uncomplicated pneumonectomy or middle lobectomy can be done by this route without difficulty, but it is very hard to remove a lung anteriorly that is densely adherent posteriorly. Likewise, a lower lobectomy is much harder through the anterior approach than it is when done posteriorly. If the ribs or cartilages have been divided, as they almost always are when this method is employed, the chest

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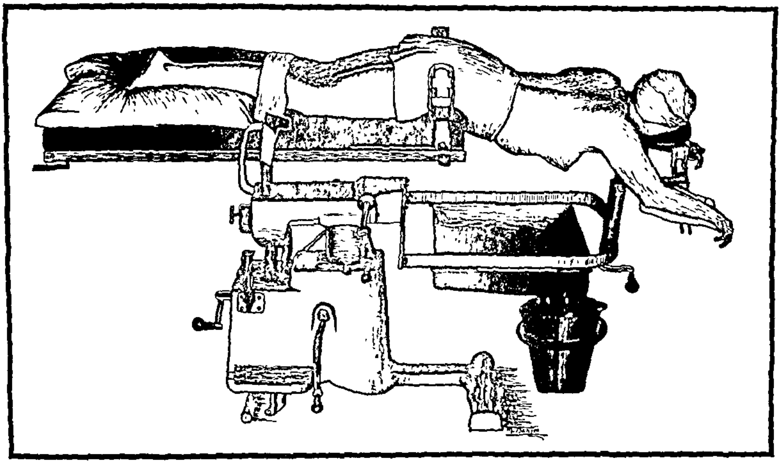

Fig. 1.—Drawing of patient on Overholt-Comper thoracic table (manufactured by the American Sterilizer Co., Erie, Pennsylvania). Support is provided for pelvis, clavicles and face. Sponge rubber-padded supports are individually adjustable. Table itself can be rotated laterally to lower either side, or foot can be raised for the Trendelenburg position. Table-top to shoulder-girdle distance is likewise variable. Individually adjustable arm supports allow scapula to rotate forward, away from operative incision.

wall is somewhat less stable than after the posterior incision, with which the scapula and the heavy muscles lend stability to the operative site. A minor drawback is the risk of infection of the cartilages if an anterior wound becomes infected. Serious infections have been so nearly eliminated, however, that this factor is of little importance.

Posterolateral Approach.—The posterolateral approach is an extremely useful one in most respects and is the one most widely employed. It gives excellent exposure. Practically any intrathoracic lesion can be handled through this route, although it is often advisable to place the pleural incision one or two rib spaces higher or lower, depending on the part of the hemithorax that is to be exposed. Any lobe or the entire lung can be removed with facility through the posterior exposure. The heavy muscles posteriorly and the presence of the scapula produce a stable chest wall.

Although there are many advantages to the posterolateral exposure and it gives the surgeon excellent visualization, there are disadvantages as well. Physiologically the patient is at a disadvantage, as the unaffected lung is more or less hampered in its function by the patient's lying on this side. Furthermore, the heart, the mediastinal structures and to a certain extent the affected lung tend to compress the dependent lung still more. Thus the unaffected lung is subjected to pressure from the weight of the body on one side and the weight of the mediastinal and contralateral thoracic organs on the other. Of the two factors, the compression caused by the patient's being placed on the side is probably of greater importance. If the unaffected lung is free of disease it will tolerate this burden easily enough, but in the presence of reduced pulmonary function the added factor assumes much greater importance. A recent report of Rothstein, Landis and Narodick[2] is of interest. They carried out bronchospirometric studies on 11 patients with the patient supine and then again with the patient on one or the other side. Surprisingly enough, they found that oxygen absorption was always greater in the dependent lung than in the uppermost lung when the patient was in the lateral decubitus position. They also found a constant increase in total oxygen consumption in the lateral as compared with the supine position. It is difficult to explain the increased oxygen absorption and the increased respiratory efficiency of the dependent lung. One suggestion is that the pressure in the pulmonary vascular system of the dependent lung is increased by gravity, with the opening up of more capillary beds, and that in this way a greater absorptive surface is presented. The explanation of the need of increased oxygen as evidenced by increased absorption in the lateral position is not yet apparent. These studies are being pursued further, and it is hoped that these investigators will also study the function of each lung separately in the prone position.

Beecher and Murphy[3] reported rather exhaustive studies of the blood gases and pH of the blood before and at varying periods after thoracic operations done with the patient in the lateral position and under nitrous oxide-ether anesthesia. They found that, although the technic used provides an abundance of oxygen, it does not remove sufficient carbon dioxide, so that relative acidosis develops. The changes begin as soon as the patient is placed in the lateral position and before the pleura is opened. These changes do not take place when the patient is supine. Further studies[4] are now being done with patients in the prone position.

One of the more important postoperative complications is the spilling of secretions from the diseased to the healthy lung. The opportunity provided for this circumstance is greater in the posterolateral position than in any other. The risk can be reduced by use of a moderately steep Trendelenburg position, but this does not afford complete protection by any means. If the bronchi are thoroughly aspirated at the completion of the operation the risk of spread is decreased, and it is not often that one sees serious difficulty on this score in nontuberculous patients. Apparently smaller amounts of secretion may lead to mischief in tuberculous patients, and every effort must be expended to eliminate this unfortunate occurrence.

From the surgeon's viewpoint there are two other disadvantages. One is that the lung tends to fall away from the incision, especially if the patient has a nonrigid mediastinum. Thus the surgeon must work at some disadvantage or else exert traction on the lung to maintain its position near the incision. The least important drawback is that any blood or fluid that collects in the chest during operation tends to drain toward the hilum of the lung and thus obscures the operative field.

The Prone Position.—It is readily apparent that the prone position overcomes most of the disadvantages of the other positions without adding many difficulties of its own. This position is illustrated in Figure 1. It will be noted that the arms are held by adjustable supports and the movements of the chest and abdomen are unhampered from a respiratory standpoint. The best position for the patient's head in the prone position is with the face toward the floor. The head and face are maintained in this position by using a padded frame. The appliance leaves the face exposed, but it is not as accessible to the anesthetist as when the patient is placed in one of the other positions. In some instances the head can be placed on the side, which then gives the anesthetist better exposure for tracheobronchial aspiration, but theoretically it is not desirable to have the neck rotated for the time necessary to complete a long operation. I have had the patient's head thus rotated during a moderate number of operations without noting any ill effects, but it seems best to avoid any possible difficulties on this score. For those who introduce the endotracheal tube with the patient under general anesthesia there is a further drawback, in that the patient has to be placed in position on the table after anesthesia has been induced and the endotracheal tube placed. This is also the common practice when the posterolateral approach is used and is not a serious disadvantage in either instance.

To obtain good exposure with the patient in the prone position the incision has to be extended around anteriorly to at least the anterior axillary line and carried up posteriorly to include the inferior rhomboid and the lower half of the trapezius muscles. Owing to the length of the incision, opening and closing take a few minutes longer than with the posterolateral approach. For simple right middle lobectomy the prone position is a little awkward compared with the anterior approach, as the upper and lower lobes have to be retracted somewhat to expose the hilum of the middle lobe. The operation can be done without difficulty with the prone position, and I use it routinely for middle lobectomy, as it is often impossible to be certain preoperatively that only the middle lobe will have to be dealt with. Also, in my opinion there are advantages to using one approach routinely, as it makes for greater familiarity and speeds up the routine opening and closing because it permits better teamwork on the part of the operating personnel.

The advantages of the prone position by far outweigh the disadvantages. Physiologically, it is as good as the anterior approach and far superior to the posterolateral. The entire thorax and upper abdomen are completely unencumbered, as the body is supported by the clavicles, the face and the anterior superior spines of the pelvis. There is no hindrance to full chest expansion (Fig. 2). From the surgeon's standpoint the prone position has much to offer. It gives excellent access to the entire posterior thoracic space and direct access to the posterior mediastinal structures. Practically any procedure on the lung or esophagus can be handled with this exposure. The bronchus, being posterior, can be occluded as the first step in hilar dissection to minimize the chance of bronchogenic spread. This is of utmost importance to the patient, especially if the lesion is tuberculous, as comparatively small amounts of material may give rise to a contralateral infection.

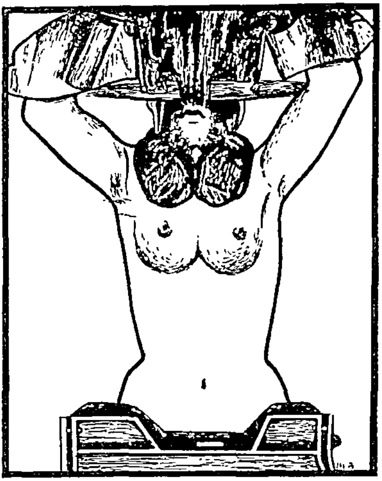

Fig. 2.—Drawing of undersurface of patient in prone position to illustrate freedom of abdomen and thorax. Incision can be extended as far anteriorly as desired, and there is no encumbrance to respiration.

Although, with modern anesthetic measures, patients tolerate long thoracic operations very well while in the lateral decubitus position, the lung on the unaffected side is placed at a decided mechanical disadvantage. The patient is usually placed over a pillow, which further limits thoracic movements; and besides that, the lung is further hampered by the heart, the mediastinal structures and the lung, which fall against it. When the patient is prone none of these circumstances prevail. Thus good oxygenation can be maintained without frequent use of positive pressure. It has been my practice to use procaine paravertebral block and local infiltration anesthesia as extensively as possible. I have found that in the prone position the patient can often be carried through the entire operation without supplementation of the block. An endotracheal tube is always inserted, with cocaine anesthesia, before the patient is placed on the operating table, and oxygen is given throughout the operative procedure by use of the closed-circuit anesthesia apparatus. The elimination of deep general anesthesia is seemingly an added help in the prevention of contralateral spillage of secretion. I believe that the postoperative course is smoother after local anesthesia than when a general anesthetic has been administered. Positive pressure is needed infrequently by patients under procaine anesthesia in the prone position, and controlled respiration has not been used.

With the patient on the side the mediastinum tends to fall away from the surgeon. Some degree of traction is often necessary to keep the hilum in proper position for dissection. Traction on the hilum may result in reflex neurologic disturbances resulting in cardiac irregularities or cardiac standstill. I have encountered these vagovagal reflexes much less frequently since I have used the prone position. Some of this decrease may be due to the more extensive use of procaine anesthesia since the adoption of the prone position.

There are various other minor advantages. One is the tendency for all liquid material to drain away from the hilum area and, in fact, out of the chest entirely if the incision has been extended well anteriorly. This is of distinct help if one wishes to adopt the technic of saline irrigation during dissection instead of using gauze sponges. In my opinion, irrigation with suction is the superior method, especially for segmental pulmonary resections. The hilar area is directly in front of the surgeon with the patient in the prone position, and one does not have to work over the ridge formed by the vertebral column as in the posterolateral approach. Thus it is mechanically easier for the surgeon, and he can also work comfortably while seated on a stool, which often aids in a painstaking dissection, not to mention the physical rest afforded by this change of position during a long operation.

Besides the Overholt-Comper table,[5] which was designed for the prone position, there are various attachments provided for a conventional operating table. Naclerio[6] has designed one of the more popular modifications. Davidson had a simple framework built which functions nicely and is inexpensive. Hurley[7] has used firm pillows (8 by 8 by 18 inches) under the pelvis and across the manubrium of the sternum and clavicles. This is the simplest plan yet devised. Any method that allows the patient to be supported by the face, clavicles and hips while leaving the anterior aspects of the chest and abdomen exposed will function adequately.

Although the prone position is primarily intended for pulmonary resections, it is likewise advantageous for other intrathoracic operations, such as pulmonary decortication, repair of diaphragmatic hernia, transthoracic splenectomy and esophagectomy with esophagogastrostomy. I have found the position especially favorable for esophageal lesions (Fig. 3). With the patient in the prone position it is natural and easy to make the anastomosis of the esophagus to the posterior surface of the stomach, rather than to the anterior as is the custom with the patient in the lateral position. When the anastomosis is posterior the stomach can then be sutured to the prevertebral fascia and pleura so that the anastomotic site is in the narrow vertebral gutter, where it can more readily become walled off and the pleural cavity further protected should there be any infection. Mobilization of the stomach is facilitated by the prone position, as the stomach tends to fall into the chest and does not have to be pulled up under traction; therefore, the anastomosis can be accomplished easily.

COMMENT

The most important reason for using the prone position is the prevention of contralateral spread from the diseased lung during operation. No method is universally successful, but the prone position has been found to be a material aid in this effort. It is not possible to get comparable figures for the different positions, but the incidence of contralateral spread has been greatly reduced, as reported by many who employ the prone position. In my series of 72 pulmonary resections during the past two years I have had only 1 contralateral infection. Apparently this one was due, in part at least, to an improperly placed endotracheal tube through which catheter aspiration could not be done satisfactorily. The lateral position was used 5 times in this series. In 4 instances the resections were performed on children so small that they could not be satisfactorily stabilized on the prone-position operating table. In another instance (the only one I have ever encountered or seen reported) marked hypertension developed when the patient was placed in the prone position. He had atelectasis of the entire left lung, due to bronchial stenosis, and had a paralyzed diaphragm on that side. I cannot say whether or not these factors were instrumental in producing the hypertension. He withstood a left pneumonectomy in the lateral position without difficulty. I have not encountered any major vagovagal reflexes in this group of patients and believe that their incidence is greatly reduced, as less traction on the hilum is necessary when the prone position is used.

SUMMARY

1. The advantages and disadvantages of the various exposures routinely used for intrathoracic operations are presented.

2. Although there are definite indications for the use of each exposure, the prone position offers certain advantages over any other, especially with regard to pulmonary resections: (*a*) The risk of contralateral spill of bronchial secretions is greatly reduced; (*b*) good exposure for resecting any segment or all of a lobe or lung is obtained, and thus plans can be modified after intrathoracic exploration; (*c*) there is less physiologic disturbance thoracic due to lessening of the mediastinal shift and mediastinal swing; (*d*) it appears that patients can be carried on procaine intercostal block and local infiltration anesthesia with greater ease when using the prone position than when the posterolateral approach is employed; (*e*) better exposure of the hilum is obtained, as it does not fall away from the surgeon and collections of fluid tend to drain away from the hilar area; and (*f*) There are fewer disturbing vagal reflexes, as traction on the hilum is not necessary.

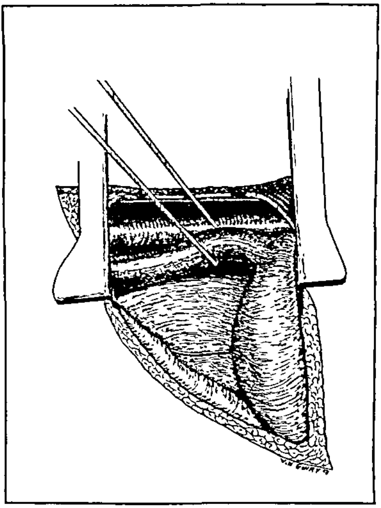

Fig. 3.—Artist's drawing showing exposure of esophagus and diaphragm obtained with patient in prone position. Stomach is easily brought up into thorax and esophagogastric anastomosis made on posterior wall of stomach.

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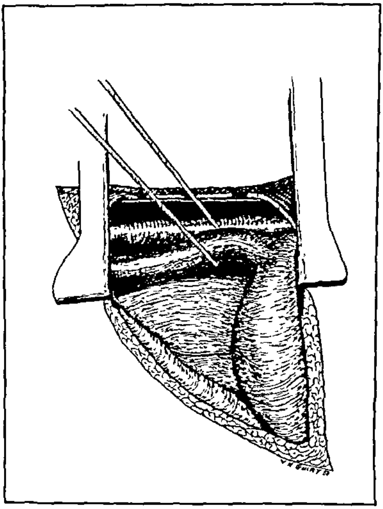

Fig. 3.—Artist's drawing showing exposure of esophagus and diaphragm obtained with patient in prone position. Stomach is easily brought up into thorax and esophagogastric anastomosis made on posterior wall of stomach.

3. In a consecutive series of 72 pulmonary resections, all but 5 of which were done with the patient prone, there was only 1 instance of contralateral pulmonary infection.

RÉSUMÉ

1. On présente les avantages et les désavantages des différentes voies d'abord en chirurgie thoracique routinière.

2. Quoique chaque voie ait son indication propre, la position en pronation offre des avantages sur les sutres.

a) la risque de'écoulment contralatéral des sécrétions bronchiques est diminué.

b) l'exposition pour résection de lobes eu poumons entiers est très bonne et on peut modifier ses plans après exploration entrathoracique.

c) il y a moins de perturbation de la physiologie thoracique à cause du peu de déplacement du médiastin.

d) dans cette position, le bloquage du nerf intercostal à la procaine et l'anesthésie locale par infiltration est beaucoup plus facile que dans la position postérolatérale.

e) on voit mieux le hile pulmonaire parcequ'il ne retombe pas au fond de la cavité où les liquides collectés sont drainés loin la région biliaire.

f) on ne fait pas de traction sur le hile et les réflexes vagotoniques son moins prononcés.

3. Une série de 72 résections pulmonaires fut faite la position "prone" (sauf 5 cas) ll n'y eut qa'un seul cas d'infection contralatérale pulmonaire.

ZUSAMMENFASSUNG

1. Es werden die Vorteile und Nachteile der verschiedenen bei intrathorakalen Operationen gewoehnlich beschrittenen Zugangswege dargestellt.

2. Wenn auch fuer jeden Zugang bestimmte Indikationen vorliegen, so bietet doch die Bauchlage, besonders bei Lungenresektionen, gewisse Vorteile gegenueber allen anderen Positionen: (a) die Gefahr des Ueberlaufens der Bronchialabsonderungen in die andere Seite wird erheblich herabgesetzt; (b) es wird eine gute fuer die Resektion eines einzelnen oder aller Lappen einer Lunge geeignete Freilegung erreicht, sodass nach Untersuchung der Brusthoehle der Operationsplan modifiziert werden kann; (c) die Stoerung der physiologischen Vorgaenge in der Brusthoehle ist gering, weil des Mediastinum nur wenig verschoben und gedreht wird; (d) Kranke koennen in Bauchlage offenbar leichter unter interkostaler Block-und lokaler Infiltrationsanaesthesie gehalten werden, als wenn der posterolaterale Zugangsweg gewaehlt wird; (e) die Lungenwurzel kann besser freigelegt werden, da sie nicht vom Chirurgen hinwegfaellt, und Fluessigkeitsansammlungen finden ihren Abflussweg von der Lungenwurzel hinweg; (f) da kein Zug an der Lungenwurzel ausgeuebt werden muss, treten storende Vagusreflexe seltener auf.

3. In einer kontinuierlichen Reihe von 72 Lungenresektionen, die alle bis auf fuenf in Bauchlage ausgefuehrt wurden, kam es nur in einem einzigen Fall zu einer Infektion der anderen Lunge.

RESUMEN

1. Se presentan las ventajas y desventajas de las diversas exposiciones usadas rutinariamente para operaciones intratorácicas.

2. Aun cuando existen indicaciones definidas para cada exposición, la posición prona ofrece ciertas ventajas sobre cualquiera otra, especialmente para resecciones pulmonares: (a) se reduce grandemente el riesgo del derrame contralateral de las secreciones bronquiales; (b) se obtiene buena posición para la resección parcial o total lobar o pulmonar, peritiendo en consecuencia modificaciones de conducta después de la exploración intratorácica; (c) menor trastorno fisiológico torácico por menor alteración y movimiento mediastinales; (d) parece más favorable para el uso de bloqueo intercostal procaínico y anestesia local por infiltración

que la vía posterolateral; (e) se obtiene mejor exposición del hilio, facilitando la canalización de las colesceciones líquidas fuera del área hiliar; (f) pocos trastornos reflejos vagales, dado que la tracción del hilio no es necesaria.

3. En 72 resecciones pulmonares consecutivas, todas efectuadas con excepción de 5 en posición prona, hubo 1 caso de infección pulmonar contralateral.

RIASSUNTO

1. Vengono elencati i vantaggi e gli svantaggi dei vari tipi di posizione chirurgica comunemente usati per gli interventi intratoracici.

2. Per quanto vi siano delle indicazioni precise per ciascuno di essi, la posizione prona offre tuttavia alcuni vantaggi su tutte le altre, soprattutto per la resezione polmonare; e precisamente: (a) riduce grandemente il rischio dello spandimento controlaterale delle secrezioni bronchiali; (b) consente una buona esposizione per resecare qualunque segmento, o lobo, o per asportare tutto il polmone, così che è possibile modificare il piano di azione una volta aperto il torace; (c) arreca il minor disturbo alla funzione toracica, diminuendo gli spostamenti e le vibrazioni del mediastino; (a) permette di eseguire con grande facilità il blocco intercostale procainico e le infiltrazioni locali anestetiche, *molto meglio che nella posizione postero*laterale; (e) facilita l'esposizione dell'ilo, che non si allontana troppo dal chirurgo, mentre i liquidi tendono a scorrer via dalla regione ilare; (f) riduce i riflessi vagali poichè non sono più necessarie le trazioni sull'ilo.

3. In una serie di 72 resezioni polmonari consecutive, eseguite tutte (tranne 5) in posizione prona, vi fu un solo caso di infezione polmonare controlaterale.

SUMÁRIO

1. As vantagens e desvantagens das varias exposições rotineiramente usadas para operações *intratorácicas são apresen*tadas.

2. Ainda que haja definidas indicações para o uso de cada uma delas, a posição prôna oferece certas vantagens sobre qualquer outra, especialmente com relação a's ressecções pulmonares: (a) o risco de derrame contro-lateral de secreções bronquicas e' grandemente reduzido; bôa exposição para-ressecar qualquer segmento, ou todo o lóbo ou pulmão é obtida; dessa maneira torna-se possivel modificar os planos depois da exploração intratoracica; (c) *ha menor alteração da fisiologia tora*cica devido á menor mobilização do mediastino e deslocamento do mesmo; (d) parece que os pacientes podem ser manejados com maior facilidade com bloqueio intercostal procainico e anestesia local por infiltração quando se usa a posição prôna do que quando a via de acésso postero-lateral e' empregada; (e) melhor exposição do hilo e' obtida; não fogem as estruturas ao cirurgião e as coleções de fluido tendem a drenar afóra da area hilar; e (f) ha menos reflexos vagais porque a tração sobre o hilo não e' necessaria.

3. Em uma consecutiva serie de 72 resecções pulmonares, todas foram praticadas com o paciente em posição prôna excépto cinco e houve somente 1 caso de infeção pulmonar controlateral.

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Prefrontal Lobotomy for Phantom Limb and Phantom Pain

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PREFRONTAL lobotomy, which was proposed by Egas Moniz for the treatment of certain psychotic conditions and first performed by him in 1935, is no longer a procedure limited to psychoses, the scope of its indications having been enlarged to include other diseases. It is especially recommended for the treatment of painful conditions in which no other kind of treatment has been helpful.[1]

The physiologic basis of this kind of surgical treatment is that the sensation of pain passes from the periphery through the spinothalamic tract to the contralateral posterolateral ventral nucleus of the thalamus, which is the site of subcortical representation of pain. This center is connected by fibers with the parietal and frontal cortex of the same side. In the frontal lobe, pain, having reached the level of consciousness, is evaluated as such and receives its emotional character. Prefrontal lobotomy, although it removes neither the painful stimulus nor the sensation of pain, may change the attitude of the patient toward the pain which before operation was unbearable.

Much literature has appeared in recent years about psychosurgery for intractable pain,[1c] but thus far no complete agreement has been reached as to its usefulness, although most authors concur in the opinion that for a period varying from several months to a year the patient's suffering is alleviated.[2] The pain does not disappear, but it no longer disturbs him, nor does it remain the focus of his attention day and night. Lobotomy relieves the suffering from pain rather than the pain itself.

This experience led to the use of leukotomy in cases of intractable phantom pain, but only isolated cases have been published.[3] We therefore wish to communicate our own experience with this operation in 4 such cases.

In about 80 to 90 per cent of amputees who have lost arms and legs, phantom limbs develop either immediately after amputation or after a certain interval. This may affect them for a limited period or for the rest of their lives. It is not known why certain persons suffer from this condition and others do not, but the psychic attitude of the patient toward the fact that he has lost a limb seems to play an important rôle in the development of this new disease, the phantom. The physiopathologic explanation for the appearance of a phantom limb assumes that pathologic stimuli in the stump produce a so-called spinal engram in the respective segments of the spinal cord. This condition, at first functional, may become fixed later on and even ascend to higher centers (thalamus, cortex).[4] The surgical problem starts when the phantom limb becomes painful (ca. 60 to 70 per cent). Many different procedures—e.g., excision of a neuroma, reamputation of the stump, sympathectomy, section of the posterior spinal roots, chordotomy and even subpial resection of portions of the posterior central convolution—have been tried,[5] but without satisfactory results. These interventions were doomed to failure, since it is usually not an organic pain, conducted through the spinothalamic tract, that bothers the patient; rather, his personality, his emotional tension and his psychic attitude toward his physical incapacity are the basis for the development of a painful phantom. Thus it can be understood that persons who suffered from the limb for a long time before amputation, or patients with Buerger's disease, for instance, suffer

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more readily from phantom pain, since there remains the psychic fixation on the painful extremity.

The most satisfactory procedure for painful phantom limb appears to be prefrontal lobotomy. In our cases we performed the operation at first on the side contralateral to the missing limb, assuming that the contralateral frontal cortex is the site of emotional evaluation of pain. If the patient's troubles did not disappear after he had recovered from the operation, or if they eventually reappeared, the intervention was performed on the homolateral hemisphere as well, although in bilateral leukotomy we have to take into consideration personality changes, as well as disturbances of intellect and memory. Yet these untoward effects usually disappear after several weeks or months, and they seem to be much slighter when bilateral lobotomy is not performed in one session but with an interval between the two sides.

A useful objective criterion for the success of the operation is the demand for analgesics, narcotics and alkaloids before and after the operation.

REPORT OF CASES

CASE 1.—The patient, Y. M., was a man aged 51, whose left leg had been amputated below the knee twenty-six years previously owing to a gunshot wound. Fourteen years prior to admission burning pain began to trouble the patient in the toes of the phantom extremity without any determinable reason. The pain grew worse, and in the following years the patient underwent several surgical treatments (including extirpation of a stump neuroma, lumbar sympathectomy, freezing of the stump, and reamputation above the knee), which brought only temporary relief. Even electrical-shock treatment did not improve his complaints. He described his pain as "dry, burning fire" which oppressed him especially at night, and he was therefore given one or two injections of pantopon nightly.

On May 30, 1949, prefrontal lobotomy was performed on the right side by the standard method of Freeman and Watts.[1b] For several days after this operation the patient did well, but by the end of the first week both phantom limb and phantom pain reappeared. Some seven weeks later, on July 20, leukotomy was carried out on the left side too. Since then it appears that the patient has been practically free from pain; in any case, he no longer complains about it. He does not require alkaloids or analgesics and takes only an occasional tablet for sleep.

He has returned to his former occupation as an accountant in a village. He reported that for four or five months after the second operation he still made mistakes in calculation, but he noticed them and would stop his work for a while. Half a year after the second leukotomy he was fit for full-time work without any disturbances.

CASE 2.—The patient, Y. C., was a man 67 years old. Two and one-half years prior to admission to our department his left leg had been amputated at the middle of the thigh because of arteriosclerotic gangrene, which developed after he had cut a corn on a toe. Immediately after amputation the phantom limb appeared. It grew shorter like a telescope, and soon afterward the patient began complaining of pain accompanied by severe paraesthesias (ants creeping in his toes, knives cutting his flesh). Neither reamputation of the thigh nor high dorsal chordotomy relieved him of his pain. Recently convulsions of the muscles of the stump had appeared.

As a diagnostic test the patient was given a spirial anesthetic. Although he was anesthetized to all qualities of sensation for well over one hour, the stump convulsions subsiding temporarily, his phantom pain did not stop.

A right-sided prefrontal lobotomy was therefore performed on June 9, 1950. For several days afterward he felt nothing at all of his lost limb. The phantom limb later reappeared, although he no longer complained of pain. Only when asked did he tell us that he felt some pain, but apparently it did not bother him.

CASE 3.—D. D., a man 41 years old, had been suffering from Buerger's disease for ten years before he was seen at our department. He had received the usual treatment, including bilateral lumbar sympathectomy. His left leg had recently been amputated below the knee because of gangrene. Four days after this operation there appeared an unbearable phantom pain which did not respond to any medication, although the wound healed by first intention. The patient described his sensations as if electrical currents ran through his leg and knives uninterruptedly cut his muscles.

The phantom was shorter than the existing leg. He cried terribly and could hardly be calmed by large doses of several of the alkaloids given together.

On Aug. 28, 1950, a standard prefrontal lobotomy was carried out on the right side, but the patient's suffering stopped for three days only. On the fourth day pain reappeared, though it was not as severe as before. He again asked for analgesics, and occasionally morphine had to be supplied. Less than three months later, on November 20 leukotomy was carried out on the other side, since his suffering had again grown very much worse. Since the second operation he no longer complains of pain unless directly asked about it. He has become quietly happy and can take part in ordinary conversation. He has not yet resumed his work as a hairdresser, for technical reasons.

CASE 4.—The patient, a man 27 years old, lost both legs below the knees in 1943 from shrapnel. In 1946 he was operated upon for neuroma in the left stump. Although phantom limbs appeared soon after the amputations, pain did not begin until seven years after the injury, at first in the right leg and several months later in the left, especially in the toes and heels. Operations on the nerve stumps and sympathectomies brought no relief. The pain grew unbearable, and the patient had to give up his work as an upholsterer.

Since the right leg was the more painful one, leukotomy was carried out on Dec. 20, 1950, on the left side. Pain disappeared immediately afterward, and the patient only occasionally asked for an analgesic. Three months after the operation he went back to his former work and was capable of remarkable physical efforts, standing or walking for many hours on his artificial limbs.

After a further two months, however, phantom pain again troubled him in both nonexistent legs. He had to discontinue his work once again and take analgesics, especially at night when he could not sleep because of pain.

On May 30, 1951, the right cerebral hemisphere was leukotomized. Since then he has stopped complaining and has resumed his work.

COMMENT

In the 4 cases presented, all the patients suffered from intolerable and intractable pain in their phantom limbs. Since all other treatment proved unsuccessful, prefrontal lobotomy was performed on the side contralateral to the phantom. In only 1 case, that of an elderly man, was this operation sufficient; in the other 3 cases a second leukotomy had to be carried out on the other side. We must therefore assume that the contralateral frontal cortex is not alone in representing the highest level of pain integration but shares this function with the ipsilateral frontal cortex. There seems to exist a bilateral representation for pain sensation. It appears incorrect to suppose that the dominant cerebral hemisphere has to be cut for permanent relief of suffering, since in the 3 cases in which the operation had to be performed on both sides it made no difference whether the first operation was on the dominant side (Case 4) or the nondominant side (Cases 1 and 3). We may add here that all 4 patients were right-handed. It seems to us that in most cases only bilateral prefrontal lobotomy can bring relief of phantom pain.

It should be pointed out that the phenomenon of convulsions of the stump observed in Case 2 (so-called stump epilepsy) was not affected by the operative procedure. This phenomenon is rather rare[5] and has been explained as a consequence of the expansion of pathologic stimuli running from the nerve ends of the stump to the anterior horn cells of the same spinal segment. The observation of cessation of stump epilepsy during spinal anesthesia provides proof of this assumption.

SUMMARY

Prefrontal lobotomy has been used as psychosurgical treatment in 4 cases of intractable phantom pain. In only 1 case was a unilateral (contralateral) section sufficient; in the other 3 cases the operation had to be carried out on both sides. Although the number of cases is small and the period of observation rather short, this type of treatment seems to be the most satisfactory procedure available for the painful phantom limb.

RÉSUMÉ

On a employé la lobotomie pré-frontale comme traitement psycho-chirurgical dans 4 das de douleurs "phantômes" intraitables. Dans un seul cas la section unilatérale (contralatérale) fut suffisante; dans les 3 autres cas on dût faire l'opération bilatérale quoique le nombre de cas soit restreint et que le temps d'observation soit court. e genre de traitment semble le meilleur pour la douleur "phantôme" d'un membre.

ZUSAMMENFASSUNG

In vier Faellen von unkontrollierbarem Phantomschmerz wurde als psychochirurgische Behandlung eine praefrontale Lobotomie ausgefuehrt. Nur in einem Falle war die einseitige (kontralaterale) Durchschneidung ausreichend; in den drei anderen Faellen musste die Operation auf beiden Seiten ausgefuehrt werden. Trotz der geringen Anzahl der bisher auf diese Weise behandelten Kranken und trotz der kurzen Beobachtungszeit scheint doch diese Form der Therapie in Faellen von schmerzhaften Phantomextremitaeten die am meisten zufriedenstellende zu sein.

RESUMEN

Se ha usado la lobotomía prefrontal como tratamiento psicoquirúrgico en 4 casos de dolor fantasma intratable. Solamente en 1 caso fué suficiente la sección unilateral (contralateral), en los 3 restantes fué bilateral. Aun cuando el número de casos es pequeño y el tiempo de observación más bien corto, este tipo de tratamiento parece ser el procedimiento más satisfactorio para el inquietante fantasma doloroso.

RIASSUNTO

In 4 casi di dolori incurabili da arto fantasma venne praticata una cura psicochirurgica a mezzo di lobotomia prefrontale. In un caso bastò praticare la operazione da un solo lato (il controlaterale), negli altri 3 si dovette eseguirla da ambedue i lati. Per quanto il numero dei pazienti così curati sia piccolo e piuttosto breve il tempo di osservazione trascorso, sembra che i risultati ottenuti consentano già di dire che tale metodo rappresenti la cura migliore dei dolori da arto fantasma.

SUMÁRIO

A lobótomia pre-frontal foi usada como tratamento psico-cirurgico em 4 casos de dór fantasma intratavel. Em somente um caso uma trepanação unilateral (controlateral) foi suficiente; nos outros 3 casos a operação teve que ser praticada em ambos os lados. Ainda que o numero de casos assim tratado seja pequeno e o tempo de observação sobremaneira curto, este tipo de tratamento parece ser o mais satisfatório para a dôr fantasma dos membros.

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Surgical Repair of Subcutaneous Tissue Defects

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THE correction of contoural defects due to total or subtotal loss of subcutaneous tissue of the face, neck and breasts is essential chiefly for cosmetic reasons, since function is rarely impaired.

There are many factors that create a great demand for the correction of these depressed deformities. Lipodystrophy usually involves the subcutaneous fat of the face and neck. The condition is most frequently bilateral and rarely affects other parts of the body. In the progressive stage there may be complete loss of the subcutaneous fat. This atrophy brings the facial bones into undue prominence and forms hollows in the face and cheeks (Fig. 1).

Hemiatrophy of the face can be placed in two categories.[1] The first is the nonprogressive or congenital type, which is characterized by hypoplasia resulting in retardation of growth of the affected side; the second is the progressive variety, which begins early in life. The atrophy may involve both sides of the face. This type of deformity covers an area over the branches of the trigeminal nerve. The cause may be infection or trauma in the region of distribution of the fifth nerve. Skin, subcutaneous fat and connective tissue are usually affected; muscle and bone are frequently involved. The slowly progressive atrophy of the fat and muscles results in a shrunken, hollow appearance of the affected side of the face. The skin and muscles become firmly attached to the bony structure, but normal function is not impaired. There are usually an associated fibrosis of arterioles and capillaries and disintegration of sweat glands and atrophy of hair follicles, all of which gives rise to scleroderma and alopecia. The condition is self-limited (Fig. 2).

Similar atrophic changes of the face may be due to the aging of facial tissues.[2] In this sagging process the subcutaneous fat of the upper part of the face disappears. The fat tissue drops to the lower part of the jaw and neck. The muscle tissue undergoes fibrosis and attaches itself to the bony structure, producing hollows in the cheeks. This fibrosis causes cheek folds to hang down. The accumulated skin and fat gravitate to the chin and neck producing overhanging folds (Fig. 3).

Subcutaneous tissue defects are also caused by trauma, burns, abcesses or surgical excision of large cysts or tumors of the face, neck and breasts (Figs. 4, 5, 6 and 7).

In certain social, theatrical and business endeavors a normal appearance is essential. Those handicapped by these deformities are psychically affected. Inferiority complexes, with a high degree of self-consciousness and embarrassment, usually accompany these manifestations.

In correcting such deformities various materials have been used for filling in.[3] Alloplastic materials, such as paraffin, vitallium, tantalum gauze, latex, polyethylene and (more recently) a soft elastic sponge known as vinyl-acetate, all give temporary contoural corrections. Polyisobuteline is also used as a substitute for autogenous tissue, since it is soft and resilient and will hold the desired shape. After due time, however, all alloplastic materials prove unsuccessful because of varying degrees of tissue intolerance.

Experimental cases have proved that in human isogenous fat grafts the fat completely disappears in transplantation. The connective tissue replacing the isogenous fat graft becomes so reduced in volume that it can in no way act as filling-in substance. Human autogenous fat grafts are

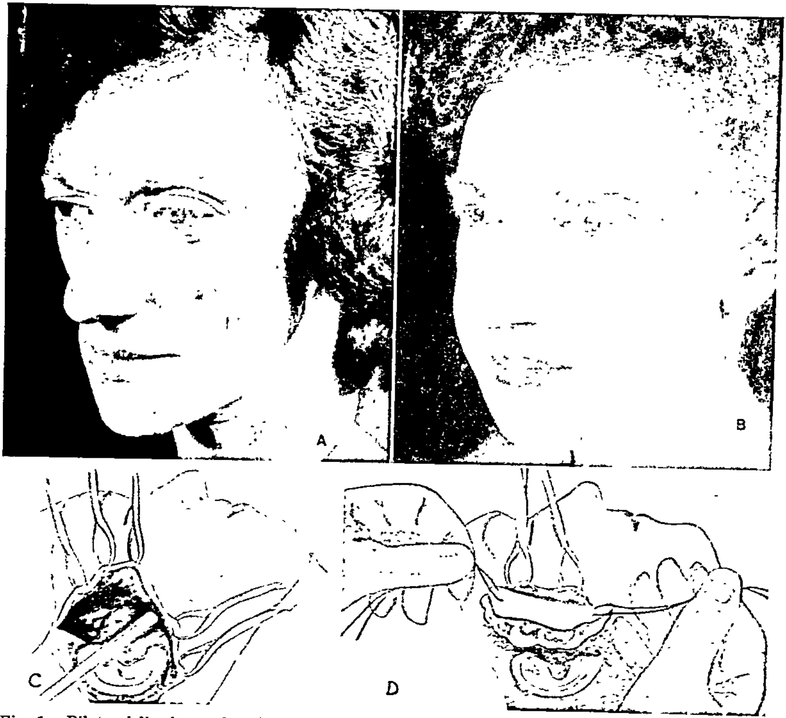


Fig. 1.—Bilateral lipodystrophy of face. *A*, marked atrophy of subcutaneous fat and muscles over malar, maxillary, buccal and mandibular regions. *B*, appearance two years after graft implantation. *C*, incisons made around ear and skin completely undermined subcutaneously beyond depressed area. *D*, section of derma-fat-fascia, derived from the abdominal wall, properly shaped and held by anchor sutures, inserted into prepared pocket.

frequently used and survive transplantation as fatty tissue, but there is an average loss of 50 per cent by weight and volume within a year after transplantation.[4]

Autogenous derma-fat-fascia grafts are best used, since they survive transplantation with a minimum loss of tissue and within a short time become part of the host tissue.[5] The graft, being covered by a layer of derma on one side and having fascia as its base, attaches itself firmly to the recipient area. This kind of graft is readily invaded by capillaries; this results in an increase in the vitality of the graft which renders it more resistant to infection and furthers the tendency to regeneration. Further advantages of this graft are that it is more easily handled, gives better contour and produces a firmer filling-in substance with normal resiliency.

Before reconstruction is undertaken, the defective area must be free from infection and completely healed. The recipient and

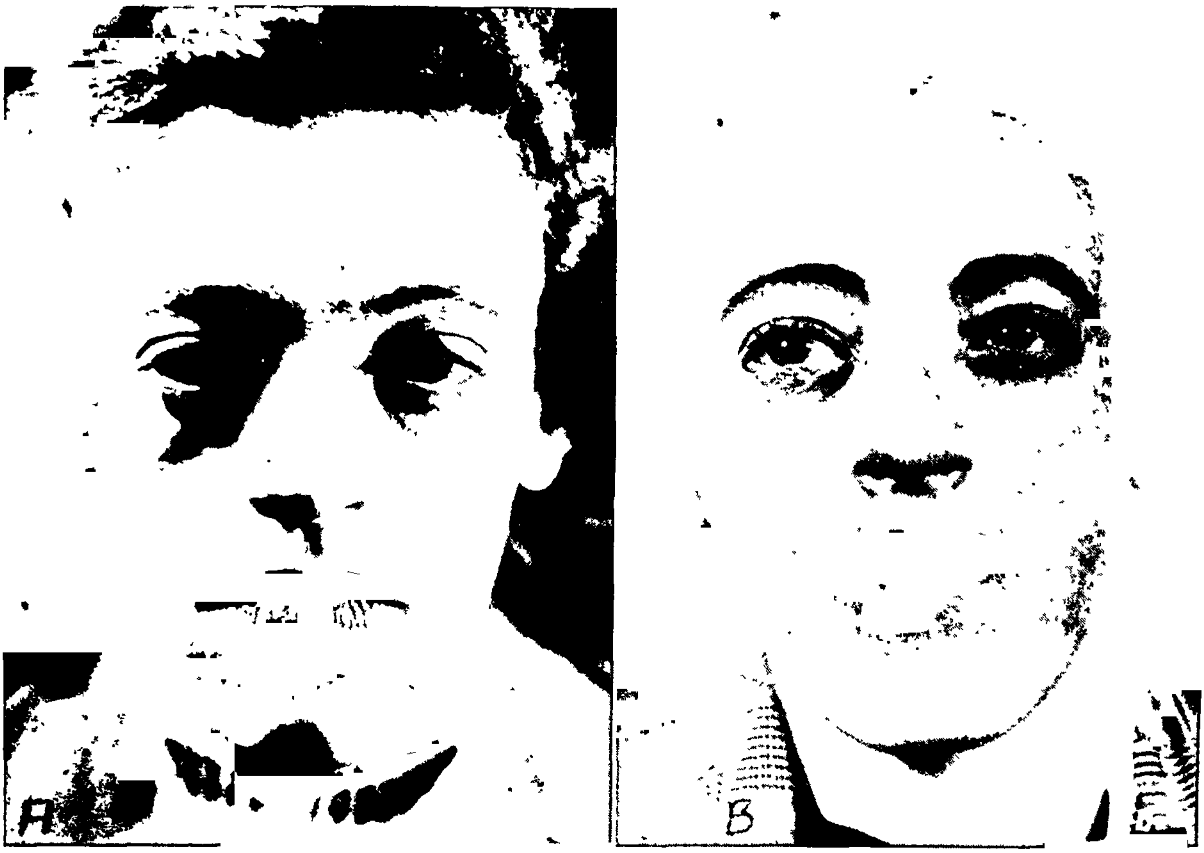
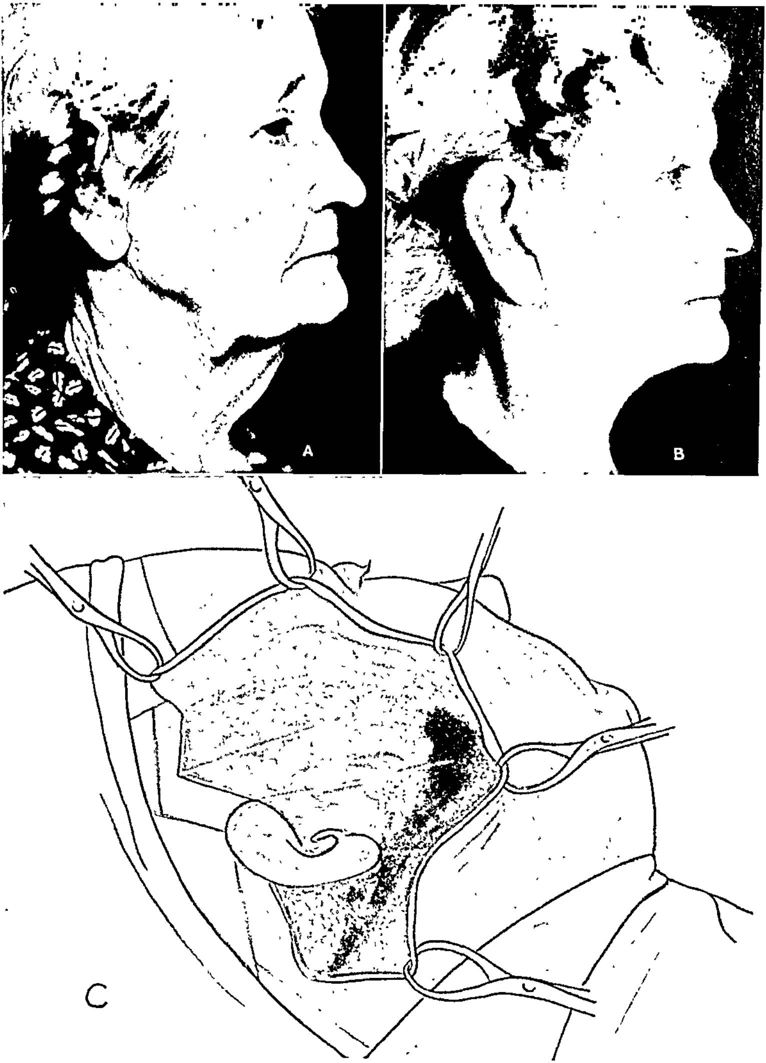


Fig. 2.—Bilateral hemiatrophy of face. *A*, total loss of subcutaneous fat and muscles under malar region and cheeks down to mandible. Skin and muscles became firmly attached to bony structure, producing marked shrunken hollows over both cheeks and causing skeleton-like appearance. *B*, appearance one year after an operation similar to that illustrated in *C* and *D*, Fig. 1.

donor areas are aseptically prepared and draped. A general anesthetic is preferable. A pattern is made over the defect area to determine the amount of graft necessary to build the contour of the missing part. The amount of the transplant should be slightly larger than the amount actually required, to allow for absorption. The necessary thickness of the derma-fat-fascia transplant needed to fill in the deformity must be definitely determined before the donor area is chosen. The best sites are the abdominal and gluteal regions.

The pocket of the implant is made over the existing scar if one is present from a previous operation; if not, the incision is made in an inconspicuous area. In facial corrections the incision is best made as follows: Beginning at 1 cm. above the ear, the incision is followed anteriorly to the crease of the ear, posteriorly to the tragus. downward to the lobe and posteriorly to

Fig. 3 (opposite).—Marked sagging of subcutaneous fat and skin of face and neck. *A*, relaxed skin and fat of face has gravitated to chin and neck, producing jowls and overhanging folds simulating double chins. *B*, appearance after operation. Extensive undermining of skin and anchorage of subcutaneous tissues will prolong effect for many years. *C*, incisions made around the ear; skin completely undermined. Fixation anchor sutures (No. 0 chromic) inserted into the fat and fascia; one at nasal-labial area, one at angle of mouth and two at chin and neck. Sutures drawn upward and attached to temporal muscles in front of ear and behind it. Relaxed fat and fascia elevated to their original position, thus eliminating sagging chin and neck line and filling in hollows of cheeks. Skin then drawn upward and posteriorly and excess tissue excised. Skin margins sutured around ear, obviating visible scarring.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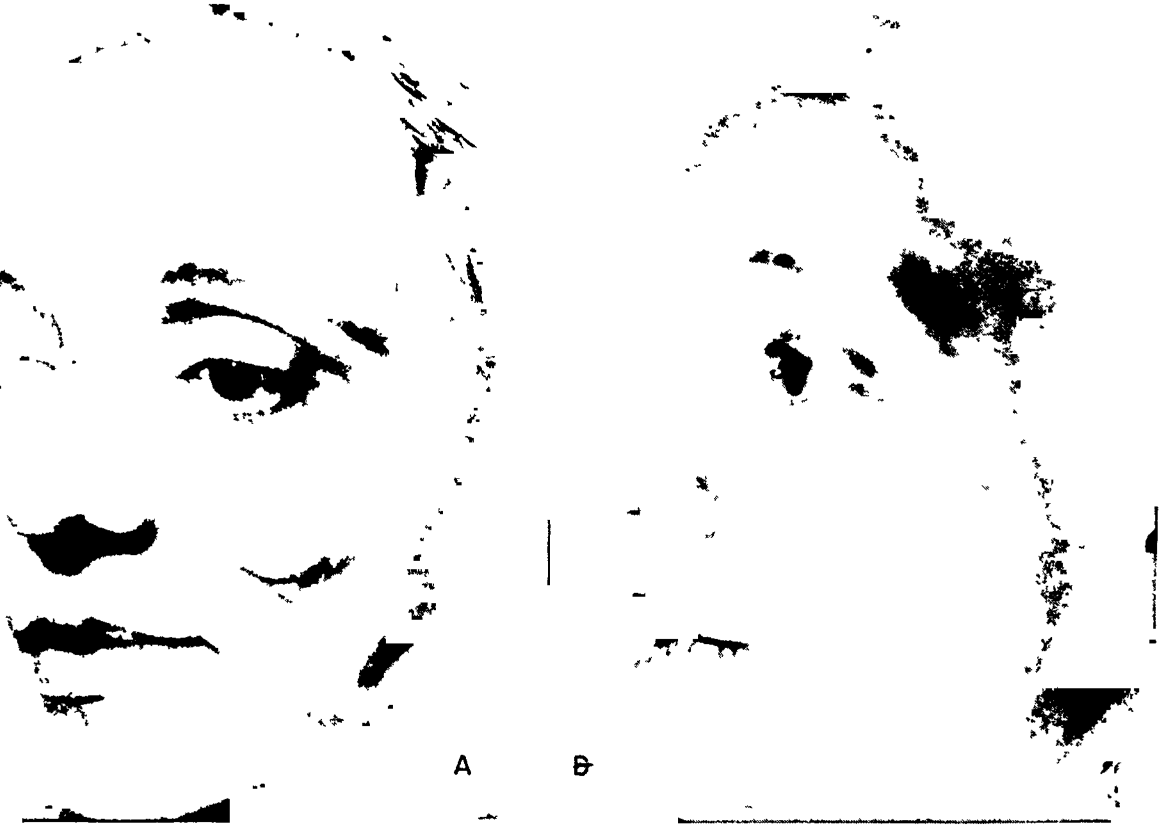

Fig. 4.—Deformity due to trauma. *A*, depressed scar with loss of subcutaneous tissue. *B*, scar excised and margins of skin widely undermined to relax all contractures. Adjacent and circumjacent fat and muscles brought over and utilized for filling in. Tension eliminated by use of deep catgut sutures. Margins of skin advanced and approximated to form relaxed skin surface and then closed with numerous fine silk sutures.

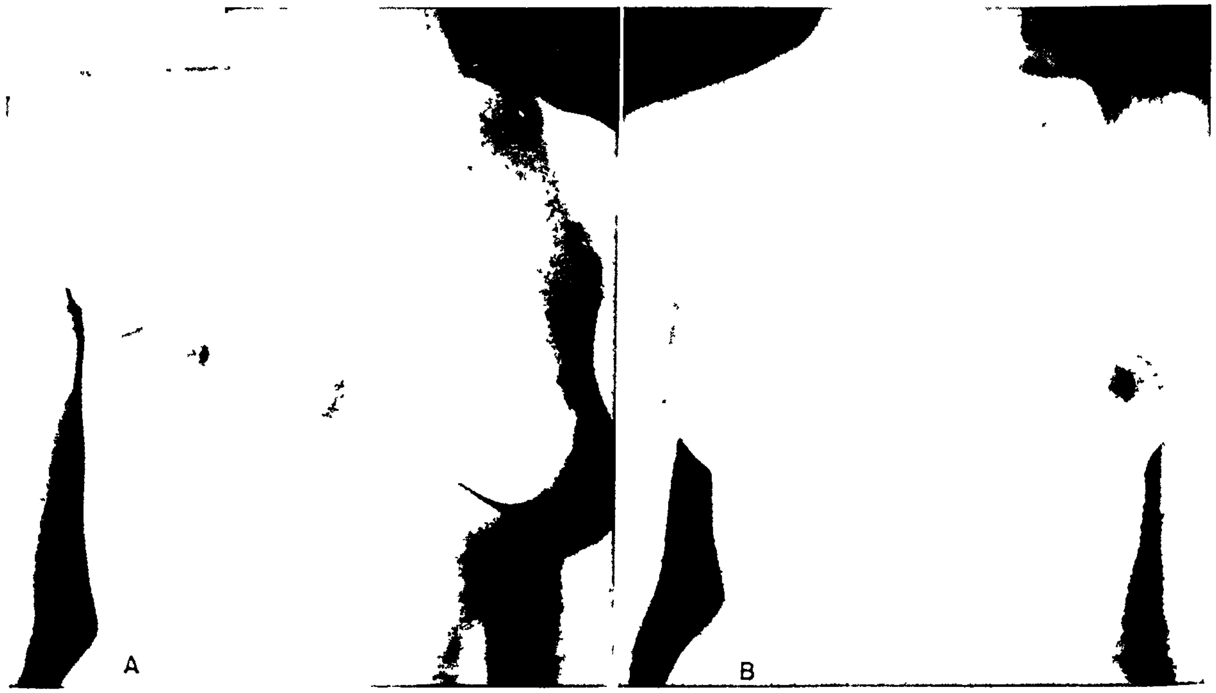

Fig. 5.—Subtotal loss of breast due to abscess. *A*, deformed breast with adherent scar and loss of one-third of its mass, causing asymmetry of the breast. *B*, appearance of corrected defect one year after implantation of derma-fat-fascia graft.

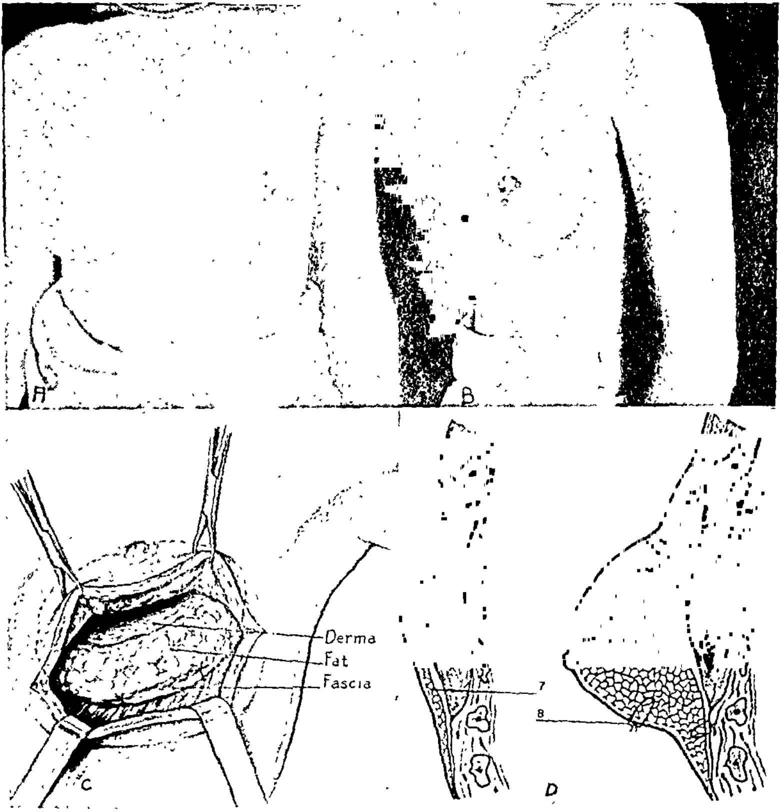

Fig. 6.—Complete loss of breast. *A*, deformity resulting from removal of fibroma. *B*, appearance of breast two years after operation. *C*, defect corrected by derma-fat-fascia transplant inserted in pocket made through existing scar. *D*, sagittal section of reconstructed breast, showing derma-fat-fascia transplant anchored in position. *1*, anchor suture; *2*, pectoralis major muscle; *3*, fascia; *4*, derma; *5*, skin; *6*, derma-fat-fascia transplant; *7*, adipose tissue; *8*, anchor suture.

the tragus, downward to the lobe and posteriorly to the crease at the junction of the ear and neck two-thirds to the top of the appendage. Through this incision the skin is widely undermined to and beyond the margin of the defective area.

In breast corrections the incision is made over the existing scar or in the inframammary fold.[6] The skin, with the nipple attached, is extensively undermined to form a pocket large enough to receive the graft without tension. Hemorrhage must be controlled, since the formation of a hematoma will cause loss of the graft. Hemostasis is best effected by pressure with hot wet packs. These packs are left *in situ* while the graft is removed from the donor area. Thrombin may be sprayed

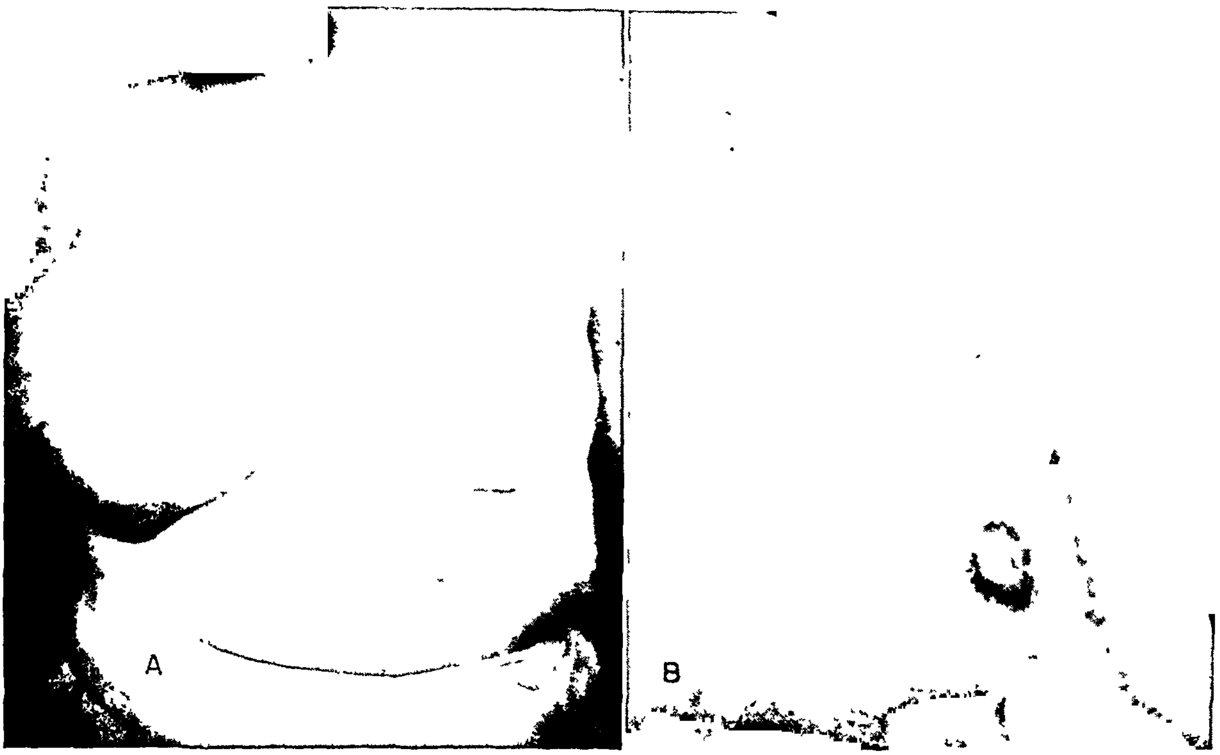

Fig. 7.—Complete loss of breast and nipple. *A*, disfigurement resulting from removal of benign tumor. *B*, breast rebuilt by derma-fat-fascia transplant and construction of pseudo-areola and nipple.

into the pocket to aid in the control of capillary oozing. To lessen the operative time, an assistant can prepare the recipient area while the graft is being removed.

The graft must be removed with the derma and fascia intact. The pattern of the approximate amount of graft is marked over the donor area. The section of derma to be left intact is outlined with dye. The epithelium is removed from the outlined section, the dermatome being advantageously used. To avoid the formation of tiny cysts from sweat glands, sebaceous glands and hair follicles in the dermis after transplantation, the entire epidermis must be completely removed from the graft. In using the dermatome, the cement should be applied to the drum over a space similar in extent to the outlined section of epithelium to be excised. Oblique incisions are then made along the outer margins of the derma, deep through the base of the fat, to and including the fascia. The section of the fat covered by derma and attached to the underlying fascia is gently cleared for the requisite distance by blunt dissection. The appropriately sized derma-fat-fascia graft is stripped from the underlying muscles in one part, since several sections *in toto* tend to greater absorption than does a single one. Hemorrhage in the donor area is controlled, and the margins of the surrounding fat are undermined and approximated by catgut sutures to obliterate dead spaces created by removal of the graft. The skin margins are approximated with interrupted silk sutures, and a pressure dressing is applied.

The gauze packs are removed from the previously prepared pocket, which must be thoroughly dry. The graft, held with several anchor sutures, is introduced into the cavity with as little handling as possible and is placed with the dermal aspect directly under the skin flap and the fascia at the base. The anchor sutures are made to emerge through the skin at the distal ends of the pocket. The graft is shaped to the desired rotundity and anchored to the fascia and muscles at the base of the pocket. With the graft in place, the skin margins are closed with fine interrupted silk sutures. No drains are required.

Sea-sponges or mechanic's waste should be placed over the graft, and the dressing immobilized with equal pressure. The patient is advised to keep the part as nearly immobile as possible for a week, at the end of which time the skin sutures are removed.

SUMMARY

In surgical correction of disfigurements due to subcutaneous tissue losses, derma-fat-fascia transplants have proved experimentally and clinically to be the best material.

When the deformity is due to sagging of the subcutaneous tissue, facial palsy or facial asymmetry caused by trauma, elevation of the relaxed tissues to the normal position will correct these defects.

RÉSUMÉ

La correction chirurgicale des difformités dues à la perte du tissu sous cutané se fait par greffe dont le meilleur matérial est le dermetissu adipeux- fascia.

Quand la difformité est dûe à l'afaissement du tissu sous cutané à la paralysie faciale ou l'asymétrie faciale causée par un traumatisme l'élévation des tissus relâches à leur position normale corrigera ces défauts. . . .

ZUSAMMENFASSUNG

Zur chirurgischen Korrektur entstellender subkutaner Weichteildefekte haben sich Transplantate aus Haut, Fett und Faszie experimentell und klinisch als das beste Material erweisen.

Wenn die Entstellung durch Einsinken des Unterhautzellgewebes, durch Fazialislaehmung odor durch traumatische Asymmetrie des Gesichts hervorgerufen ist, koennen die Defekte durch Hebung des erschlafften Gewebes in die normale Lage ausgeglichen werden.

RESUMEN

Los transplantes dermo-grasa-aponeurosis han probado ser, experimental y clinicamente, el mejor material para la corrección quirúrgica del desfiguramiento debido a pérdidas del tejido celular subcutáneo.

Cuando la deformidad se debe al tejido celular subcutáneo abolsado, parálisis facial o asimetría facial traumática, se corregirán dichos defectos elevando los tejidos relajados a la posición normal.

RIASSUNTO

Nelle operazioni di plastica per deturpamento da perdita di sottocutaneo, i lembi costituiti da derma, grasso e fascia si sono clinicamente e sperimentalmente dimostrati i migliori.

Quando poi la deformità sia dovuta a rilassamento del sottocutaneo, a paralisi del facciale o ad asimmetria della faccia da trauma, si potranno correggere tali difetti riportando i tessuti rilasciati nella posizione normale.

SUMÁRIO

Os transplantes de derma-adiposidade-fascia tem sido aprovados experimentalmente e clinicamente como o melhor material para correção cirurgica de disfigurações produzidas por perdas de tecido subcutaneo.

Quando a deformidade é devida á queda de tecido subcutanêo, paralisia facial ou asymetria facial causada por trauma a elevação dos tecidos frouxos a posição normal corrigirá esses defeitos.

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Management of the Retained Placenta

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LOUISVILLE, KENTUCKY

THAT deaths related to diseases and accidents of pregnancy have been sharply reduced during the past twenty years is a well-known fact. This trend downward has been identified with the elevation of courses in obstetrics to a major level in medical schools. The emphasis that has been centered on antepartum care has contributed primarily to reduction of the incidence of toxemia of pregnancy and its resulting fatalities, and to a considerable degree to the reduction of intrapartum infection and postpartum sepsis.

With the advent of chemotherapy and antibiotics, the rate of sepsis took a spectacular drop. Maternal death from hemorrhage, however, continues to take a high toll of lives and to keep the overall maternal mortality rate high. One of the major causes of the continued high death rate from hemorrhage is the element of surprise. The hemorrhage may be sudden, spectacular, and difficult to combat unless proper facilities are available for its immediate treatment. Most essential is a team of assistants to facilitate control of hemorrhage, treatment of shock and replacement of blood loss. The hemorrhage may be insidious during the immediate postpartum period as a result of atony of the uterine musculature, a tendency to bleeding, or incomplete evacuation of the uterus. The blood loss may be underestimated, or the uterus may fill with a large amount of blood, allowing the patient to slip into irreversible shock before the surgeon is aware of the severity of the condition.

From 1937 to 1945 the percentage decline in maternal deaths from septicemia was 30.7. The percentage decline from toxemia as a cause of maternal deaths was 35.5, while the percentage decline in maternal deaths from puerperal hemorrhage was only 13. Thus it becomes apparent that if we are to lower maternal mortality rates further we must direct our greatest efforts toward prevention of deaths from blood loss. Since the third stage of labor covers the greatest danger period, constant study is necessary to improve its management.

In a review of maternal deaths due to hemorrhage in Philadelphia over a ten-year period, Beecham stated that "one of the glaring omissions in the management of the cases was good prenatal care." The amount of blood loss is academic; the important thing to keep in mind is the amount of blood the individual patient can afford to lose. This does not mean that one should try an endurance test, because the ability of the patient to withstand hemorrhage is difficult to determine. However, good antepartum care does give one the opportunity to correct possible predisposing factors to hemorrhage and enable one to anticipate hemorrhage and be prepared for its control and treatment. In Beecham's series of deaths from postpartum hemorrhage, 7 per cent of retained placentas were not delivered, and in 12 cases the placenta was left in while the patient bled to death.

This presentation is a study of the problems presented by, and the management of, the third stage of labor. This is not a plea for early manual removal of the placenta, nor do we advocate inactive management of the third stage of labor. We present our data factually, emphasize the varied problems connected with the retained placenta, and in our small number of cases attempt correlation of the pathologic picture with the clinical background and the postpartum cour

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TABLE 2.—*Complications of Placental Separation at Louisville General Hospital from* 1945 *through* 1949

Total deliveries	9,446
Total cases of this type	34
Incidence	1:277 (0.36%)

TABLE 3.—*Complications of Placental Separation* 1945 *to* 1949—34 *Cases*

Retained placenta (complete) — No excessive bleeding
Retained placenta (partial separation)—Excessive bleeding
Recognized incomplete third stage—May or may not occur
Unrecognized incomplete third stage—Delayed bleeding

of the Louisville General Hospital, University of Louisville School of Medicine. This table indicates that there were 34 cases which offered an unusual pathologic problem for the obstetrician in the third stage of labor. The incidence was 1 to 277 deliveries, or 0.36 per cent. These 34 cases represent pathologic conditions of the third stage recognized while the patient was in the hospital, immediately after delivery or shortly thereafter, and conditions observed in patients who returned to the hospital after delivery owing to delayed complications resulting from the third stage of labor.

Table 3 indicates the classification of these 34 cases. In the first group there was complete retention of the placenta. There was no hemorrhage, but after delivery of the baby the placenta did not separate from the uterine wall as in a normal third stage. In this group the duration of the third stage was dependent upon the time lapse before the obstetrician removed the placenta manually.

The second group represents retention of the placenta with obvious partial separation. This separation was obvious because of the excessive amount of bleeding. In these cases, of course, the third stage of labor was short, since the judgment of the obstetrician was to interrupt the third stage when there was any indication of excessive bleeding.

The third group represents the recognized incomplete third stage with or without bleeding. Upon inspection, the placenta was found to be incomplete. Also included in this group are cases in which the third stage was completed but the patient continued to bleed. It was obvious from the excessive bleeding that the uterine cavity must be explored for fragments of retained placental tissue. In this group the time ranged from two minutes to seven hours; however, the patients were under constant observation during this period.

The fourth group contains examples of what we call the unrecognized incomplete third stage. The cases had certain factors in common. It was felt that the third stage of labor was uncomplicated; inspection of the placenta revealed no missing fragments so far as could be determined, and the patients exhibited no excessive bleeding. All patients had an uncomplicated postpartum course in the hospital and were discharged after a few days. From three days to several weeks post partum it was necessary to readmit them because of excessive uterine bleeding.

Of the 34 cases under discussion, manual removal of the placenta was used 24 times in order to complete the third stage. Table 4 shows a breakdown of these 24 cases in terms of age, race and parity. As shown in the table, 5 patients were Negro primiparae and 5 were white, averaging 23 years of age with an age range of 18 to 27 years. This table indicates that the majority were multiparae, and the ratio was 15

TABLE 4.—*Manual Removal of Placenta* (*24 Cases*)

Patients	No. of Cases	Age Range	Average Age
Primiparae, Negro	5	18-27	23
Primiparae, white	5	21-27	23
Multiparae, Negro	4	19-36	29
Multiparae, white	10	22-38	30

TABLE 5.—*Obstetrical Background*

Retained Placenta (12 cases)	*Hemorrhage* (5 cases)
Early abortion—1	Early abortion—1
Late abortion—1	Recognized incomplete stage—5
Manual removal—2	Early abortions—1-2
Version—1	Preeclamptic course—1

TABLE 6.—*Manual Removal of Placenta (24 Cases) Complications in Present Pregnancy*

Antepartum death of fetus	2
Breech presentation	5
C. P. D. (absolute)	1
Prolonged labor	5
Prolonged rupture of membranes	4
Multiple pregnancy	1
Severe anemia	3
Total	21

TABLE 7.—*Manual Removal of Placenta—24 Cases*

Indication	No. of Cases	Average Duration of Third Stage
Retained complete	12	1 hr. 40 min. (2-50)
Hemorrhage	5	18 min. (45)
Recognized incomplete, third stage	5	2 min. to 7 hrs.
Teaching	1	Immediate
Repair of cervix	1	Immediate

white to 9 Negro. Our total number of deliveries of Negro patients exceeds that of white patients.

Of the 24 patients in whose cases manual removal was necessary because of retained placenta, hemorrhage or a recognized incomplete third stage of labor, a certain number had obstetrical backgrounds that may have been responsible (Table 5). As is shown in the tabulation of the 12 cases of retained placenta, there had been 1 early abortion, 2 previous manual removals, and 1 instance of version on previous occasions. Of the 5 patients from whom the placenta was removed manually because of hemorrhage, 1 had had an early abortion before. Of the third group, 1 had had two early abortions and 1 a previous preeclamptic course. This does not mean that these factors were directly responsible for the immediate pathologic conditions observed by us, but they may be mentioned as possible predisposing factors in complications of the third stage of labor. The incidence of abortion and manual removal in these 12 cases was above the average.

Table 6 indicates the number of times that certain complications occurred in these 24 cases of manual removal. This table does not mean that 21 different patients exhibited the pathologic condition designated, but that the pathologic condition occurred in the antepartum and labor history of these patients. There were 5 breech presentations, an incidence well above that usually recorded.

Table 7 gives a breakdown of indications for manual removal of the placenta. It shows the number of cases for each indication and the average duration of the third stage of labor. In the group of retained complete placenta, the average duration of the third stage was one hour and forty minutes. The longest duration of this stage was two hours and fifty minutes. In these cases, when the placenta was completely retained and there was no bleeding, the time limit alone was the indication for manual separation.

Table 8 shows the types of delivery, number of days in the hospital, and morbidity rate in the series. There were 3 precipitate deliveries, none of which were morbid. The average hospital stay was six days. There were 7 normal sterile spontaneous deliveries, with an average of five and six-tenths hospital days and no morbidity. There were 4 cases without morbidity in which delivery was done by low forceps extraction. The average number of days in the hospital was five and a half. Rotation was done in 4 cases, in none of which was morbidity observed. There was an average hospital stay of three and a half days. There were 5 cases of breech extraction, with 20 per cent morbidity and an average stay of six days in the hospital. There was 1 destructive operation associated with morbidity;

TABLE 8.—*Manual Removal of Placenta (24 Cases)*

Delivery	No. of cases	Hosp. Days, average	Morbidity, %
PPT	3	6	0
NSS	7	5.6	0
LF	4	5.5	0
Rotation	4	3.5	0
Breech extraction	5	6	20
Destructive	1	23	100

Average hospital days (destructive operation excluded) 5.3

Morbidity rate (destructive operation excluded) 4%

TABLE 9.—*Manual Removal of Placenta (24 Cases)*

Six weeks examination	No. of Cases
Pelvic tenderness	2
Retroversion	2
Subsequent obstetrical history	
Normal term delivery	5
Retained placenta	1
Abortion (early)	2

TABLE 10.—*Unrecognized Incomplete Third Stage (10 Cases)*

Summary of Data	
Patients with antepartum course, labor, delivery and third stage uncomplicated	10
Patients discharged 3 to 8 days post partum	10
Patients readmitted for vaginal bleeding 3 to 42 days post partum	10
Treatment	
Dilatation and curettage	6 cases
Tissue removed from cervix	4 cases
Pathologic Report	
Retained placental tissue	

TABLE 11.—*Unrecognized Incomplete Third Stage (10 Cases)*

Pathologic Obstetrical Background (5 Cases)

No. of Pregnancies	Pathologic Condition and Time Since Occurrence
2	Early abortion 1 year
9	Early abortion and D&C; 7 years
4	Two early abortions; 5 & 7 years
2	Manual removal of placenta and D&C; 3 years
2	Premature delivery with difficult placental separation, 1½ years

the patient remained in the hospital twenty-three days. This was a case of prolonged labor with Duhrssen's incision and midforceps delivery. With this case excluded, the hospital stay was five and three-tenths days and the morbidity rate 4 per cent. (Our average period of hospitalization for all patients admitted to the obstetrical service is three and six-tenths days.) There was no mortality.

As is evident from Table 9, a follow-up examination at six weeks showed that there were 2 patients with marked pelvic tenderness. There were 2 with retroversion of the uterus; pelvic examination otherwise gave normal results. The subsequent obstetrical history of these patients revealed normal term deliveries in 5 cases. Of the 5 patients, 1 had had a retained placenta which necessitated manual removal. Two had had early abortions. This follow-up may be incomplete, because some patients may have been delivered elsewhere.

Table 10 represents the unrecognized incomplete third stage, of which there were 10 cases. The table gives a short summary of the course, the management and the common factors in these cases. All of the patients had a normal antepartum course, uncomplicated labor, a normal delivery and what was believed at the time to be an uncomplicated third stage of labor. The longest stay in the hospital was eight days post partum. This postpartum course was likewise uncomplicated during hospitalization. All of these patients were readmitted three to forty-two days post partum because of excessive vaginal bleeding. On their second admission, as treatment for excessive bleeding, 6 underwent dilatation and curettage; 4 were examined by sterile vaginal examination and tissue was removed from the cervical canal by the use of sponge forceps. The pathologic report on placental tissue confirmed the suspicion of retained secundines after what was thought to be a normal complete stage of labor.

Of the 10 patients with an unrecognized incomplete third stage of labor, 50 per cent had pathologic obstetrical backgrounds. A bipara had had a previous early abortion one year prior to the current delivery. A woman who had had nine pregnancies and had borne nine children had had an early abortion and a dilatation and curettage seven years previously. In this last pregnancy the placenta may have been attached near the site of attachment of the placenta in the early abortion, at a point where trauma had resulted from the dilatation and curettage. A quadripara had had two early abortions, respectively five and seven years earlier. A bipara had had a manual removal and a dilatation and curettage three years previously. Another bipara had a history of premature delivery with difficult placental separation ("after was cut out under anesthesia") o one-half years prior to the current delivery.

Table 12 presents a group of 10 cases of unrecognized incomplete third stage. The age range was 19 to 35 years. Eight patients were white and only 2 were Negro. As is shown by this table, the labors were not excessively long and were all considered normal. Under "type of delivery" it is shown that the majority had normal sterile spontaneous deliveries. In the Louisville General Hospital we routinely deliver multiparas, when relaxation of the perineum permits, by means of normal sterile spontaneous delivery. Our primiparas are delivered routinely by episiotomy and forceps. In all of these 10 cases delivery was uncomplicated. This table also indicates the very short duration of the third stage of labor, the maximum being fifteen minutes. The postpartum course of these patients was considered normal in every respect. There is no reason to believe that the placenta was not inspected according to our routine. There apparently was no evidence that the third stage was not complete in every respect, but in spite of their apparently normal course these patients were readmitted for further investigation because of excessive postpartum bleeding. Further investigation of each by sterile vaginal examination and by dilatation and curettement revealed that the third stage of labor was not complete and that the subsequent bleeding was due to retained fragments in these cases of placenta.

TABLE 12.—*Unrecognized Incomplete Third Stage (10 Cases)*

Age	Race	Hr.	Min.	Type of Delivery	Duration of Third Stage, Min.
29	W	3	15	N. S. S.	4
35	C	5	30	N. S. S.	15
30	C	5	20	N. S. S.	2
24	W	16	45	N. S. S.	4
28	W	6	52	L. F.	2
19	W	4	0	N. S. S.	2
24	W	18	15	N. S. S	6
29	W	2	55	B. Ex.	1
25	W	16	7	B. Ex.	4
16	W	18	50	L. F.	4

SUMMARY

1. The records of 9,446 patients who delivered in the Louisville General Hospital during the five-year period from 1945 through 1949 are reviewed.
2. There were 34 cases of retained placenta, an incidence of 1,277, or 36 per cent.
3. These 34 cases were classified clinically into four groups: (a) retained placenta without hemorrhage; (b) retained placenta (partial) with hemorrhage; (c) recognized incomplete third stage (retained cotyledon, etc.), and (d) unrecognized incomplete third stage (10 cases).
4. The morbidity rate was 4 per cent (excluding 1 destructive case).
5. In 6 of the 24 cases of manual removal antibiotics were required. Of the 6 patients, 2 were ill during their hospital course. Two patients were febrile before manual removal but were not febrile after the procedure.
6. There was 1 case of severe shock. The estimated blood loss in this case was 1,500 cc.
7. Ten patients with unrecognized incomplete third stage of labor were readmitted to the hospital within three to forty-two days post partum, owing to excessive blood loss. None of them were in shock.
8. The mortality rate was zero.

CONCLUSIONS

1. Careful observation and treatment during the antepartum course, with definite measures to combat anemia, toxemia and other maladies, will better enable the patient to withstand complications of the third stage of labor.
2. Early manual removal of the placenta is essential when there is excessive bleeding after completion of the second stage without complete spontaneous separation of the placenta.
3. Manual removal of the placenta is a relatively safe procedure if manipulation is done while the patient is in good condition. The procedure should always be

carried out with strict aseptic technic, and one should not rely on antibiotic agents *alone* as a prophylaxis against infection.

4. Blood loss should be replaced promptly and amply, the amount administered being determined by study of the individual patient's need.

5. Careful management of the third stage of labor, which includes meticulous examination of the placenta and evaluation of blood loss after its expulsion, should minimize the number of cases of unrecognized incomplete delivery of the placenta.

ZUSAMMENFASSUNG

1. Die Krankengeschichten von 9446 Patientinnen, die in einem Zeitraum von fuenf Jahren (1945-1949) im Louisville General Hospital entbunden wurden, werden untersucht.

2. Es kamen 34 Faelle von zurueckgehaltener Plazenta zur Beobachtung, was einer Haeufigekeit von 1: 277 oder 3.6% entspricht.

3. Diese 34 Faelle wurden klinisch in 4 Gruppen eingeteilt: (a) zurueckgehaltene Plazenta ohne Blutung, (b) partiell zurueckgehaltene Plazenta mit Blutung, (c) erkanntes unvollstaendiges drittes Stadium (zurueckgehaltenes Kotyledon etc.), und (d) unerkanntes unvollstaendiges drittes Stadium (zehn Faelle).

4. Die Morbiditaetsquote betrug 4% (ausschliesslich eines destruktiven Falles).

5. In sechs von den 24 Faellen, bei denen eine manuelle Ausraeumung vorgenommen wurde, waren Antibiotika erforderlich. Von diesen 6 Frauen waren zwei waehrend ihres Krankenhausaufenthaltes leidend.

Zwei hatten Temperaturerhoehungen vor der manuellen Ausraeumung, waren aber nach dem Eingriff fieberfrei.

6. Ein Fall von schwerem Schock wurde beobachtet; bei dieser Kranken wurde der Blutverlust auf 1500 ccm geschaetzt.

7. Zehn Patientinnen mit unerkanntem unvollstaendigem drittem Stadium wurden innerhalb von drei bis zweiundvierzig Tagen nach der Entbindung wegen uebermaessigen Blutverlusts wieder ins Krankenhaus aufgenommen. Keine von ihnen befand sich im Schock.

8. Die Sterblichkeitsquota war Null.

RÉSUMÉ

1. Il s'agit d'un relevé des fiches de 9,446 patientssayant accouché à l'hôpital général de Louiseville durant la période de cinq ans s'étendant entre 1945 et 1949.

2. Il y eut 34 cas de rétention placentaire; une incidence de 1:227 ou 3.6 pour 1000.

3. Les 34 cas ont été classifiés cliniquement en 4 groupes:

- a) rétention placentaire sans hémorragie
- b) rétention placentaire partielle avec hémorragie
- c) troisième stage incomplet reconnu (rétention due cotylédon, etc. . . .)
- d) troisième stage incomplet non reconnu (10 cas)

4. Le taux de morbidité fut de 4% (en excluant 1 cas destructeur).

5. Dans 6 des 24 cas où on dût faire une extraction manuelle, il fallut donner des antibiotiques. Sur les 6 deux furent malades pendant leur séjour à l'hôpital. Deux patientes firent de la température avant l'extraction manuelle pour retomber à la normale ensuite.

6. Il y eut un cas de shock sévère. On estima qeu la patiente avait perdu 1500 cc de sang.

7. 10 patientes chez qui le troisiéme stage du ravail ne fut pas reconnu furent réadmises entre les troisiéme et 42 ième jours post-partum, à cause de perte sanguine excessive. Elles ne firent pas de schock.

8. Le taux de mortalité: 0%.

RESUMEN

1. Se revisan las historias clínicas de 9,446 mujeres que dieron a luz en el Hospital Gen [illegible] Louisville d [illegible] quinque [illegible] 949.

2. Hubo 34 casos de retención placentaria, una incidencia de 1:277 o 3.6%.

3. Estos 34 casos se clasificaron clínicamente en cuatro grupos: (a) retención placentaria sin hemorragia; (b) retención placentaria (parcial) con hemorragia; (c) tercer período reconocido incompleto (retención de cotiledon, etc.); (d) tercer período no reconocido in completo (10 casos).

4. Indice de morbilidad del 4%, excluyendo 1 caso destructivo.

5. Se requirieron antibióticos en 6 de los 24 casos de evacuación manual. De las 6 pacientes 2 enfermaron durante su permanencia en el hospital. Hubo fiebre en 2 pacientes antes de la evacuación manual con apirexia después de la misma.

6. Hubo 1 caso de choque grave. En este caso se estimó una pérdida sanguínea de 1,500 cc.

7. 10 pacientes en tercer período de trabajo no reconocido incompleto reingresaron al hospital de 3 a 42 días del parto, debido a pérdida sanguínea excesiva. Ninguna tuvo choque.

8. El índice de mortalidad fué 0.

RIASSUNTO

1. Sono stati controllati i dati relativi a 9446 partorienti ricoverate al Louisville General Hospital in 5 anni fra il 1945 e il 1949.

2. Vi furono 34 casi di ritenzione di placenta, con una frequenza di un caso su 277 (cioè 3,6%).

3. Tali casi vennero classificati clinicamente in 4 gruppi: (a) placenta ritenuta senza emorragia; (b) placenta ritenuta (parziale) con emorragia; (c) stadio incompleto riconosciuto (per ritenzione di cotiledoni etc.), e (d) stadio incompleto non riconosciuto (10 casi).

4. La morbilità media fu del 4%.

5. In 6 casi su 24 di estrazione manuale furono necessari gli antibiotici. Di queste 6 pazienti 2 furono gravi durante la degenza ospedaliera. Due done ebbero febbre prima dell'estrazione manuale ma non dopo.

6. Vi fu un caso di shock grave. In questo caso la perdita di sangue fu valutata a 1500 cc.

7. 10 pazienti con stadio incompleto non riconosciuto furono riammesse in ospedale da 3 a 42 giorni dopo il parto, per perdite ematiche notevoli. Nessuna di esse era in shock.

8. Mortalità zero.

SUMÁRIO

1. São revistas as observações de 9,446 pacientes que deram a luz no Louisville General Hospital durante o periodo de 1945 á 1949.

2. Houve 34 casos de retenção de placenta; uma incidencia de 1:277, ou 3.6 por cento.

3. Esses 34 casos foram classificados clinicamente em 4 grupos: (a) placenta retida sem hemorragia; (b) placenta retida, parcialmente, com hemorragia; (c) terceiro gráu incompléto identificado (cotiledonio retido, etc.) e (d) terceiro gráu imcompléto não identificado (10 casos).

4. A taxa de morbilidade foi de 4 por cento (excluin do-se um caso destrutivo).

5. Em 6 dos 24 casos de remoção manual os antibioticos foram necessarios. Das 6 pacientes, 2 tornaram-se enfêrmas durante sua permanencia no hospital. Duas pacientes estavam com fébre antes da remoção manual, mas tornaram-se apiréticas depois da mesma.

6. Houve um caso de choque grave. A perda sanguinea neste caso foi de 1,500 cc. aproximadamente.

7. Dez pacientes em terceiro gráu de trabalho de parto incompléto não reconhecido foram readmitidas ao hospital dentro de 3 a 42 dias de post-partum, devido á excessiva perda de sangue. Nenhuma delas estava em choque.

8. A taxa de mortalidade foi zero.

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Multiple Primary Malignant Lesions of the Colon

Report of a Case

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HYMEN D. STEIN, M.D.**

PHILADELPHIA

BILLROTH[1] first called attention to the problem of multiple primary malignant lesions in 1869. He noted that multiple tumors could occur either simultaneously or at different times. He also postulated three criteria to identify multiple malignant growths as independent lesions: 1. The two growths must show distinct histologic differences, so as to exclude the possibility that they are of the same origin. 2. Each lesion must spring from its own epithelium. 3. Each must be held responsible for its own group of metastatic growths.

Since that time, many articles have been written on this subject. Christian Fenger,[2] in 1888, reported a case of double carcinoma of the colon. Major,[3] in 1918, reviewed the literature on all multiple malignant tumors from 1899 to 1918. Dowden,[4] in 1917, reported the case of a patient with four malignant lesions of the colon, all within six years. In 1932, Warren and Gates[5] surveyed the literature and collected 1,257 cases of multiple malignant lesions. They expressed the opinion that the criteria of Billroth were too strict to establish the diagnosis of primary multiple malignant disease. From their series of 1,078 autopsies, they recorded an incidence of 3.7 per cent multiple malignant tumors. They also noted that the colon was the most common site of double primary carcinoma, there being 55 cases. In 1947, Guthrie[6] reported 2 cases of multiple primary malignant lesions of the colon. In 1949 he reported an additional case.

M. T., aged 56, was admitted to the Jewish Hospital on Oct. 8, 1948, with a fracture of the left tibia, the result of being struck by an automobile. At the time of admission it was noted that, in addition to the fracture, there was a functioning colostomy in the left upper quadrant of the abdomen. Rectal examination was impossible because of a painful spastic anal sphincter. On October 18, with spinal anesthesia, the fracture was reduced and a cast applied. At this time, while the spinal anesthesia was still in effect, a rectal examination revealed a polyp of the rectum, approximately 6 cm. above the anal sphincter. This tumor was removed the following week by means of the electrocautery and its base fulgurated. The pathologic report was "adenocarcinoma in rectal polyp". The patient was discharged on November 5. Before discharge, careful evaluation of the history revealed that the patient had undergone several surgical procedures on the intestinal tract, and requests for further information were sent to the various hospitals to which he had been admitted previously.

Past Medical History.—The patient was first admitted to the Lankenau Hospital on May 22, 1934, with complaints of attacks of indigestion over a period of one year. Three months prior to admission, he noted colicky pain in the lower part of the abdomen. On several occasions he had had episodes of diarrhea, occasionally with watery stools. At no time had he passed any blood. An appendectomy was performed, and the pathologic diagnosis was chronic appendicitis. He had a normal postoperative course and was discharged on June 1.

On May 7, 1935, he was readmitted to the Lankenau Hospital, complaining that for the two months prior to admission he had noted sharp pains in the lower part of the abdomen, which were relieved when he had a bowel movement. These movements were occasionally

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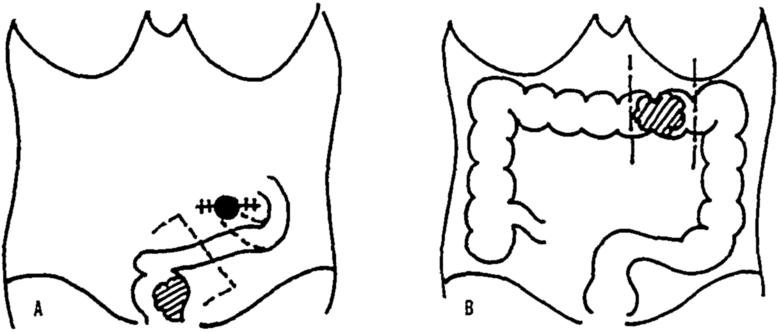


Fig. 1.—*A*, functioning colostomy a lesion of rectum. *B*, carcinoma of distal end of transverse colon.

associated with the passage of blood. On physical examination at that time, a mass was palpated in the left lower abdominal quadrant. Roentgen examination on May 7 showed a persistent irregularity, with some spasticity involving the distal third of the transverse colon. The impression was that of inflammatory diverticulosis, although the possibility of malignant change could not be ruled out. He was discharged on May 9.

His third admission was on May 12. At that time he was operated upon, and a large mass was observed at the distal end of the transverse colon. A Mikulicz type of resection was done, as well as a cecostomy. The pathologic diagnosis was carcinoma, grade III. No metastasis was noted in the lymph nodes removed. On June 17 a second stage Mikulicz operation was done, and on July 31 the cecostomy tube was removed. The patient was discharged on July 31. A roentgenogram taken on July 30 was reported as showing that the distal third of the transverse colon was somewhat irregular and the lumen narrowed, but no obstruction could be noted.

The patient's fourth admission was on December 10. At that time he complained that for a week prior to admission he had noticed a "lump" in his abdominal scar. A barium study was done, and a growth was noted in the descending colon. At operation, a mass involving the middle portion of the descending colon was resected and an end-to-end anastomosis was done. A cecostomy was done at the same time. The pathologic report on the removed specimen described it as an intramural lesion, grade III adenocarcinoma, with numerous intralymphatic metastases.

The fifth admission of this patient to the Lankenau Hospital was on June 5, 1939. At that time he stated that in July 1938 he had felt a small lump in his left lower abdominal quadrant. This had become tender, and a little later he noted some constipation. At operation, a mass involving the descending colon was found. The transverse and descending colon were removed by means of a Mikulicz type of procedure, and a colostomy was performed. The pathologic diagnosis on the mass in the descending colon was recurrent carcinoma. No metastatic nodes were observed in the removed specimen. He was discharged, and instructed to return for closure of the colostomy.

This patient was then admitted to the Jefferson Hospital on Sept. 27, 1945, complaining of bleeding from the colostomy. Digital examination of the colostomy revealed a firm lesion in the proximal loop of the exteriorized bowel. On October 3 the involved portion of bowel was resected. The pathologic report of the specimen was as follows: "Section consists of tissue from the transverse colon; in the deeper layers, there is carcinoma." The patient was discharged on November 9.

On Feb. 24, 1949, the patient was admitted to the Jewish Hospital for study of his colostomy. At that time a barium enema revealed the following picture: The cecum, ich c not be filled by the water-barium mixture because of regurgitation (retrograde) through the colostomy opening, prevented satisfactory conclusions. The patient was advised to have either a barium enema or a barium study by mouth. After that, a sigmoidoscopic examination failed to show recurrence of a polyp. A roentgenogram was made on March 22 and revealed the following data: The colonic barium enema study showed the distal half of the colon. There was evidence of marked colonic atrophy, with reduction in caliber. The proximal half of the colon was inadequately visualized. The conclusion was made that atrophy and constriction of the distal hemicolon were present and that there was inadequate visualization of the proximal hemicolon. On March 14, with the region under spinal anesthesia, a left rectus incision was made, the previously performed colostomy being excised. When the peritoneal cavity was opened it was discovered that the patient had a loop colostomy. The liver was free of metastasis. The cecum and the remaining ascending, transverse and descending colon, to the point of the previous colostomy, were removed. The ileum was then brought down and anastomized, end to side, to the descending colon. The postoperative course was entirely satisfactory, and the patient was discharged on March 27. The pathologic report on the specimen removed at operation described it as a section of the colon 22 cm. in length, with some attached mesentery and omentum. The central portion of the specimen presented a fungating tumor mass measuring 5 by 5 by 5 cm. The tumor extended through the peritoneal coats to the bowel. Microscopic study revealed intestinal mucosa merging into adenocarcinomatous growth. Several lymph nodes were under this growth.

The patient was referred to the hospital on April 21, 1949, by Drs. J. J. Cohen and L. Weiss, and the diagnosis of Brill's disease was confirmed by positive agglutinations. He improved on aureomycin therapy and was discharged on April 30.

On July 22, 1950, the patient returned for study. Examination of the colon by means of a barium enema demonstrated that the sigmoid was distended to normal caliber and configuration. A well functioning ileosigmoidostomy was demonstrated, and the barium entered the small bowel without interruption. The ileosigmoidostomy was noted to be normally movable; after evacuation the mucosal pattern was well visualized, and this was seen to be intact. There was, therefore, no roentgen evidence of recurrence of malignant change. A double contrast examination was performed, and this offered no additional information.

On October 7 another roentgen examination was done, which disclosed the barium passing readily through the site of the ileosigmoidostomy. No abnormality was noted about the

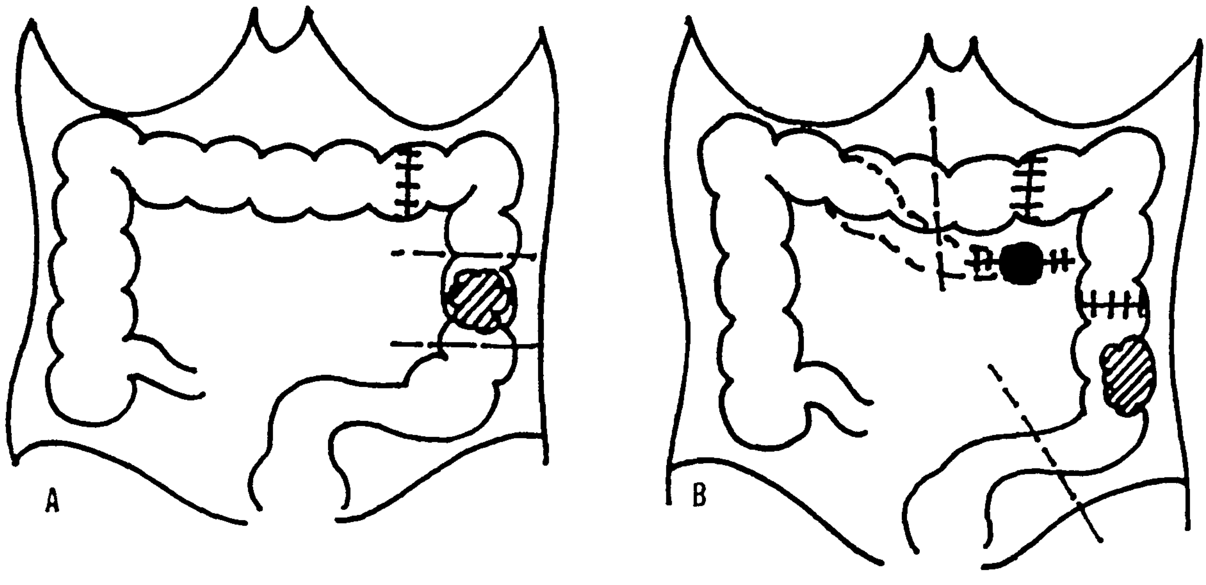
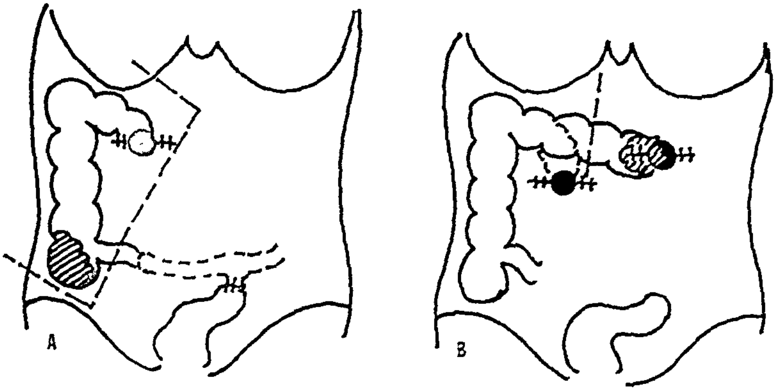


Fig. 2.—*A*, carcinoma of descending colon. *B*, recurrent carcinoma of descending colon.



[illegible] carcinoma of cecum. *B*, carcinoma of transverse colon.

site of anas[illegible] there was no change to suggest [illegible] of any intrinsic disease. The large [illegible] proximal to the point of anastom[illegible] was not visualized. Several loops of ileu[illegible] visualized, and these appeared normal.

On November 15 the patient was referred to the Jewish Hospital service of Drs. J. J. Cohen and L. Weiss, complaining of some pain in the lower part of the abdomen, occasional vomiting and difficulty in moving the bowels for ten days prior to admission. He had lost no weight and [illegible] completely well except for the afore[illegible]ned complaints. Roentgen examina[illegible] this time revealed the signs of defin[illegible] obstruction of the small bowel [illegible] was advised but refused. The [illegible] was treated for approximately ten [illegible] parenteral fluids, antibiotics and th[illegible] tube. The white blood cell count was [illegible] between 13,000 and 22,000 per [illegible] millimeter, with no improvement [illegible] consent for operation was voluntar[illegible] given. At operation distention of the small bowel was noted, and firm, dense adhesions were observed between several loops of jejunum and ileum and the scars of previous operations. Many adhesions were freed. Further exploration revealed stenosis at the site of the previous ileocolostomy. A tube ileostomy was then made just proximal to this point and the abdomen was closed. During the operation no sign of recurrence of any lesion in the large or the small bowel could be noted. In addition, the liver was free from any metastatic nodules.

The postoperative course was stormy, presenting problems of fluid and chemical balance. On the third postoperative day the patient became jaundiced, and at the same time it was noted that his urinary output was totally inadequate. It was believed that his jaundiced condition might represent severe hepatitis. The leukocyte count was 37,000 per cubic millimeter of blood, with 85 per cent polymorphonuclear cells. The possibility of transfusion reaction was also considered. The urinary output decreased progressively, and it appeared that we were dealing with a case of lower nephron nephrosis. The patient died on the ninth postoperative day.

Autopsy Report.—Gross examination of the cadaver revealed a fair general condition and moderate dehydration. The complexion was mildly icteric. There was massive hemorrhage into the peritoneal cavity, and a local hemorrhage that was observed retroperitoneally in the region of the pancreas. The large bowel was absent. There was a surgical ileosigmoidostomy, which was intact. Intestinal adhesions were distributed universally, with two sites of partial obstruction in the midjejunum and the upper part of the ileum. An intact, patent ileostomy was present suprapubically. Microscopic examination revealed emphysema and [illegible] in the lungs, [illegible]

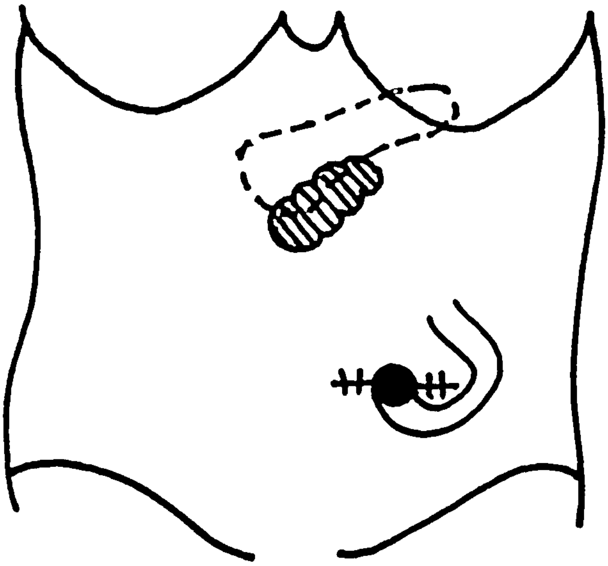


Fig. 4.—Recurrent malignant growth in vicinity of pancreas.

gestion in the spleen and liver, benign prostatic hypertrophy, severe tubular damage in the kidneys, adrenal lipoid depletion, and, at the site of ileostomy, injured fatty tissue in the process of healing, and normal bowel. In the immediate vicinity of the pancreas there was a local area of recurrent malignant disease (adenocarcinoma.)

COMMENT

This case is most interesting, since the patient obviously had multiple primary lesions in the large bowel as well as episodes of recurrence. That the lesions in the rectum, the transverse colon, the descending colon and the cecum were primary is clear, since they occurred in different portions of the intestinal tract during different time intervals. It is important to mention that the only polyp reported was in the rectum; therefore, this case was not a case of polyposis. In addition, from the history, we must conclude that the patient also had episodes of recurrence in the lesions of the transverse colon as well as in those of the descending colon. Certainly these must have been slow-growing, since at no time in any of the procedures were we able to show any lymphatic involvement. Whether the postmortem observation of adenocarcinoma around the pancreas indicated a recurrence in the pre-aortic nodes is difficult to say.

This case also illustrates the fact that adenocarcinoma involving the intestinal tract may occasionally be extremely slow in growth. It is interesting also because of the episode of Brill's disease, which was diagnosed and confirmed by laboratory tests. Again, it illustrates the fact that the possibility of multiple primary malignant lesions in the same patient should always be considered.

Finally, we do not wish to foster the impression that, because a patient has had one primary malignant lesion and begins to show signs of a second, he is in a hopeless state. Modern surgical treatment can be of definite value to some of these patients. As the life span of our patients increases, we are sure that more and more patients will show second and third lesions, as did the patient in this case.

SUMMARY

The case is reported of a man who had multiple carcinomas in the large bowel, a patient whose course has been traced for approximately seventeen years. The authors suggest that more careful records be kept of all cases, especially those on patients with malignant lesions, with particular emphasis on the pathologic reports.*

ZUSAMMENFASSUNG

Es wird ueber den Fall eines Mannes mit multiplen Karzinomen im Dickdarm berichtet. Der Krankheitsverlauf ist ueber etwa 17 Jahre verfolgt worden. Die Verfasser regen an, in allen Faellen, besonders aber bei Patienten mit boesartigen Erkrankungen, sorgfaeltigere Krankengeschichten mit ausdruecklicher Beruecksichtigung der pathologischen Berichte zu fuehren.

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*The authors wish to express their sincere appreciation to Drs. Henry Brody, Pathologist, and Theodore Krause, Resident Pathologist, Jewish Hospital, Philadelphia, Pa.

RÉSUMÉ

On rapporte ici le cas d'un patient qui avait un cancer multiple du colon et dont on a suivi l'évolution pendant à peu près dixsept ans. Les auteurs font la suggestion suivante: une tenue plus attentive en filiére de tous les cas: spécialement les cas de tumeurs malignes en appuyant sur le rapport pathologique.

RIASSUNTO

Viene riferito il caso di un paziente riconosciuto affetto da carcinomi multipli del grosso intestino e successivamente seguito per circa 17 anni. L'A. raccomanda di raccogliere con la maggior precisione possibile i dati di ogni osservazione clinica, specie quando si tratti di pazienti affetti da neoplasie maligne, con particolare riguardo ai reperti anatomo-patologici.

RESUMEN

Se comunica el caso de un paciente que tuvo múltiples carcinomas del colon y cuya evolución fué seguida por 17 años aproximadamente. Se sugiere que deben conservarse registros más cuidadosos de todos los casos, especialmente de aquellos que ocurren en pacientes cancerosos, haciéndose hincapié particularmente sobre los informes patológicos.

SUMÁRIO

E' relatado o caso de um homem que tem multiplos carcinomas no intestino delgado, paciente esse que tem sido observado por aproximadamente 17 anos. Os autôres sugérem que observações mais cuidadósas séjam feitas de todos os casos, especialmente daqueles com malignidades, realçando particularmente o relatório anatomo-patológico.

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To Our Contributors Abroad

We regret to announce that under current publishing conditions it has become impossible for the *Journal* to arrange the translation into English of original articles submitted in other languages. With the single exception of articles written specifically for the *Seccion en Espanol,* which, of course, do not require translation, we must therefore request that all articles henceforward be submitted in the English language. Prompt publication can be greatly facilitated if all manuscripts are typed in double or triple space to allow room for editorial corrections. Your cooperation will be deeply appreciated.

Genital Fistulas

A Review of Sixty-Nine Cases

H. M. LAZARUS, M.D., F.I.C.S.
VELLORE, SOUTH INDIA

THERE can be no doubt that genital fistulas occurring as a result of difficult labor must have existed from times immemorial, but up to the sixteenth century their treatment was unknown. Professor Derry of the Faculty of Medicine, Cairo, described in 1935 a large vesicovaginal fistula in the mummy of a dancing girl of the Court of Mantuhotep, who reigned about 2,050 B.C. Examination of the pelvis showed marked narrowing of the transverse diameter, and Derry concluded that the fistula was caused by damage during parturition.

Naguib Pacha Mahfouz states: "The first mention of a fistula in literature is found in a passage in Al-Kanoun by Ibn Sina, the distinguished Perso-Arabian physician, known to the Europeans under the name of Avicenna. This great observer not only mentions the occurrence of urinary fistulae in women but also states that they may occur as a sequel to *difficult labour*. He further tells us that the condition is *incurable* and remains so till death."

Ambroise Paré in 1570 was the first to recommend a method for the treatment of this condition. Up to the beginning of the nineteenth century, surgeons occasionally operated on vesicovaginal fistulas with success. Roonhuysë of Amsterdam in 1663 operated on a patient by a method devised by him. Johannes Fatio, surgeon-obstetrician of Basle, Switzerland, performed two successful operations by the Roonhuysë method in 1675 and 1684.

For over a century and a half the operation devised by Roonhuysë was neither practised nor developed by surgeons of that period, and up to the beginning of the nineteenth century the literature on this subject was limited. But with the dawn of the nineteenth century there began a determined effort to cure this accident, which is so aptly described by D. Hayes Agnew as "liable to occur in the female—and that, too, in the exercise of the highest function of her nature—which dooms her to isolation and seclusion, renders her presence intolerable to friends, and compels her to exist in an atmosphere repugnant in the highest to her own sense."

A concerted effort in different countries during the first half of the nineteenth century failed to evolve a successful and effective method. Johann Dieffenbach in 1845, in despair, wrote the following remarks: "I have filled entire wards with these wretched women gathered from all countries; I have exhausted every measure, and I have been able to cure but a few of them."

In Europe, eminent surgeons of different countries evolved and adopted methods of their own. In France, A. J. Jobert de Lamballe in 1852 published a book of 400 pages on this subject, but in the same year James Marion Sims published his contributions and the work of Lamballe went out of date.

In Germany, Wutzer of Bonn (1789-1863), Johann Friedrich Dieffenbach of Konigsberg (1792-1847), Gustav Simon of Darmstadt (1824-1876), and Johann Van Metzler of Prague were among the important surgeons who attempted the cure of vesicovaginal fistula.

Gustav Simon was a brilliant German surgeon and professor at Heidelberg. He worked independently in Europe and devised a method similar in many ways to that of Marion Sims. In 1854 he published a monograph on the treatment of vesicovaginal fistula, describing his technic. He denuded the fistulous opening of

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all scar tissue, including the vesical mucous membrane. The fistula was closed by a double row of sutures. The first row approximated the edges with fine silk, and a second set of sutures was placed at a distance from the edges to relieve tension on the first row. The fistula was exposed by traction on the cervix and by lateral vaginal retractors. He did not use a retention catheter, and he kept the patients in bed for only one day after the operation.

In England, in 1834, Montague Gossett published an article in the *Lancet* in which he reported success in a case of vesicovaginal fistula operated on by him by a method similar to that of Marion Sims. This important contribution passed unnoticed and unappreciated by the medical profession. Gossett's technic must be recorded as one of the most important contributions in the present-day treatment of vesicovaginal fistula. He described it as follows: "Having placed the patient resting on her knees and elbows, upon a firm table of convenient height, covered with a folded blanket, the external parts were separated as much as possible by a couple of assistants, so as to bring the fistula which was immediately above the neck of the bladder, into view, I seized with a hook the upper parts of the thickened edge of the bladder, which surrounded the opening, and proceeded with a spear-shaped knife to remove an elliptical portion, which included the whole of the callous lip surrounding the fistula, the long axis of the ellipsis being transversely. This was readily effected; but, in consequence of the very contracted state of the parts, the next steps of the operation were with difficulty executed; and I should not have succeeded in passing the sutures, had I not used needles very much curved, and a needle holder which I could disengage at pleasure, the needle being withdrawn with a pair of dissecting forceps after the holder was removed. In this way, three sutures were passed; and afterwards, by twisting the wires, the incised edges were brought into contact, and retained in complete apposition until they had firmly reunited. One of the sutures was removed at the end of the ninth day, the second at the end of the twelfth day, and the third was allowed to remain until three weeks had elapsed. After the operation, the patient was put to bed and desired to lie on her face, an elastic gum catheter having a bladder secured to its extremity for the reception of the urine, having been introduced and retained by means of tapes. . . . The advantages of the gilt wire sutures are these: it excites but little irritation, and does not appear to induce ulceration with the same rapidity as silk or any other material with which I am acquainted; indeed, it produces scarcely any such effect, except when the parts brought together are much stretched."

James Marion Sims did not have any real interest in the medical profession until 1845 and on more than one occasion sought to give up the practice of medicine, but was destined to have his name identified for all time with gynecology. A series of circumstances occurred between 1845 and 1849 which crowned his perseverance with success in spite of failures and disappointments. In July 1845 he saw a Negress, a slave, suffering from vesicovaginal fistula, and in two months' time a second and similar case, and in both instances he advised the owners of these women that cure was impossible. A third patient was sent to him soon after, and he decided to send her back, but as she had come from a distance he was obliged to keep her for the night. Early next morning he was called to see a woman who had been thrown from a horse and was suffering from severe rectal and vesical tenesmus. Sims put his patient in the knee-chest position and did a vaginal examination. As air rushed into the vagina, the vaginal walls were ballooned. "It was as if I had put my two fingers into a hat, and worked them around, without touching the substance of it." He immediately realized that, examined in like manner, vesicovaginal fistula could be seen with its relation to the surrounding structures. He hurried home and reexamined the patient who was about to be sent back. He visualized the fistula distinctly; it appeared, he said, "as if it had been cut out of a piece of plain paper."

After visualizing the fistula in its proper relations, Sims resolved upon "relieving the loveliest of all God's creations of one of the most loathsome maladies that can possibly befall poor human nature." He operated upon his first patient on Jan. 10, 1846, but the operation failed. "I expected to effect at once a magical cure; but greatly to my surprise and mortification, it was a failure." He tried the same technic with varied modifications on his patients for a number of years without success. His friends deserted him, but the 6 Negresses who were his patients infused courage and enthusiasm in him.

He realized that his failure had been due not to faulty technic but to the silk thread he had used. It occurred to him that silver, gold or platinum wire might solve the problem. One day he accidentally picked up a piece of brass wire as fine as ordinary sewing thread and took it to a jeweler, who made one similar to it in silver. Using this silver wire, he operated upon a Negress with complete success. It is interesting to observe that this was the thirteenth operation on the same patient.

Marion Sims became ill soon after this success. "Fearing that I might die without the world's reaping the benefit of my labors," as he expressed it, he dictated his paper "On Vesiculo Vaginal Fistula" to Dr. Isaac Hays. The paper was published in the American Journal of Medical Sciences in January 1852. Thomas Addis Emmett was Sims' assistant at the newly established Women's Hospital in New York and by May, 1868 had operated on more than 300 vesicovaginal and rectovaginal fistulas.

Classification.—Genital fistulas are abnormal communications with the genital tract or the exterior of the body of some part of the urinary tract or bowel through which urine or fecal matter is discharged. A comprehensive classification is as follows:

1. Urinary
    (a) Urethrovaginal
    (b) Vesicovaginal
    (c) Urethrovesicovaginal
    (d) Vesicocervicovaginal
    (e) Ureterovaginal
    (f) Ureterocervicovaginal
2. Fecal
    (a) Rectovaginal
    (b) Enterovaginal
    (c) Enterouterine
    (d) Enterotubal
3. Combined urinary and fecal.
4. Uteroabdominal.

Etiologic Factors.—Genital fistulas result from a variety of causes and are conveniently classified into the following three groups: (1) congenital; (2) traumatic, and (3) pathologic.

1. *Congenital:* Extroversion of the bladder, in which the two halves of the body have not united in the lower abdominal region, may occur. It is a rare deformity.

Ureteral malformations are varied; one or both ureters may terminate in the vagina at any point between the vault of the vagina and the external meatus.

Complete absence of the urethra may be observed, with the bladder opening directly into the vaginal. This is also rare. Emmett reported a case of successful operation in 1878, and a few more have been recorded since.

In this series there was no case of congenital malformation.

2. *Traumatic:* Trauma to the genital tract is usually caused by (a) prolonged and difficult labor, (b) surgical operations and (c) accidental external injury.

a. Trauma due to labor: This group includes the largest number in any reported series. In India and other countries where obstetric practice is not well organized, especially in rural areas, and training for midwives in large numbers is not available, the incidence of fistulas occurring as sequelae to difficult labor is very high.

There are two ways in which genital trauma during labor may cause a fistula: (1) sloughing and (2) tearing during obstetric operations.

1. Sloughing.—When labor is delayed and the liquor amnii is drained away, the strong uterine contractions may wedge the fetal head into the pelvis. Prolonged pressure on the soft tissues at one point between the head and some projecting part of the bony pelvis, either the symphysis pubis or the promontory, causes pressure necrosis and separation of the slough in a few days or a week after labor and leaves a fistula behind. Such impaction is not uncommon in a generally contracted pelvis or in cases of persistent occipitoposterior fetal position.

When the fetal head remains at brim for a long time in a flat pelvis after the fluid has drained away and strong uterine contractions are caused by prolonged pressure between the head and symphysis pubis or promontory of the sacrum, there may occur ischemia of the compressed tissue, sloughing and, later, fistula when the slough falls off.

Emmett pointed out many years ago that fistula is due not to improper application of the forceps but to hesitancy to apply them in cases of impaction.

2. Tearing.—A sharp instrument, such as a perforator or a pointed skull bone after perforation of the fetal head, may penetrate through the vagina into the bladder or the rectum.

Injudicious use of the obstetric forceps, particularly its application before the cervix is fully dilated and the fetal head still within it, may cause extensive tearing of the cervix and the vault of the vagina, resulting in damage to the bladder or the ureter.

In cases of difficult forceps extraction or craniotomy with the fetal head situated above the midcavity the cervix may be nipped between the blades of the forceps or cranioclast and the symphysis pubis, so that the bladder is either torn or crushed, with sloughing after a few days. This is most likely when the bladder is not emptied before obstetric extractive manipulations. Failure to empty the bladder may result in a pouch of the bladder, distended by urine, being dragged down in advance of the fetal head, with severe laceration of both bladder and vagina.

b. Trauma occurring in surgical procedures: In 94 necologic operations the ureter is more frequently injured than is the bladder. In European countries the incidence of fistulas following faulty obstetrics has markedly diminished, but, owing to the larger number of operations performed during this century, the incidence of fistulas due to surgical trauma has correspondingly increased.

Bland in 1925 reviewed 441 cases of ureteral fistula collected from the literature. In 1920 Judd reported 50 cases of vesicovaginal fistula due to surgical trauma observed at the Mayo Clinic from 1908 to 1919. In 1909, Sampson reported 19 cases in a series of 156 operations for carcinoma of the cervix.

Injury to the ureter is usually caused during total abdominal hysterectomy, Wertheim's hysterectomy, vaginal hysterectomy, Schauta's vaginal hysterectomy, operation for cysts of the broad ligament, and cesarean section.

In total hysterectomy the ureter is likely to be damaged where it crosses the lateral or anterior wall of the vagina just before entering the bladder. It may be included in the lowermost clamp or damaged in cutting the vagina.

In Wertheim's hysterectomy the ureter is dissected from the pelvic brim up to its entry into the bladder. A fistula may result from direct injury to it, or it may be caused by sloughing of the walls by denudation of its blood supply during separation.

In vaginal hysterectomy the ureter is likely to be damaged if the bladder is not pushed high up and held up while the uterine blood vessels are clamped.

In Schauta's vaginal hysterectomy the ureter is dissected away from its bed. [illegible] may be traumatized, or sloughing [illegible] occur as in Wertheim's hysterectomy. [illegible] incidence of ureteral fistulas is less with Schauta's than with Wertheim's hysterectomy.

In operation for cysts of the broad ligament the infundibulopelvic ligament is spread out, and the ureter is always in danger of being clamped along with the ovarian blood vessels. The normal course of the ureter in the broad ligament is altered in interligamentous cysts, and it may run along the lateral, the interior or the medial side of the cyst. It is particularly likely to be damaged during enucleation of the cyst at its lower pole, because venous oozing from the bed frequently occurs at this time and the ureter may be accidentally involved while the blood vessels are being clamped.

In cesarean hysterectomy for ruptured uterus the ureter may be traumatized.

Vesicovaginal fistula occurs during separation of the bladder from the front of the cervix and vagina. If the correct line of cleavage is missed, the muscular wall of some parts of the bladder is denuded during separation. The thinned-out portion sloughs after a few days, and a fistula is formed. At times, owing to chronic fibrosis between the bladder and the vagina, the line of separation is absent and the bladder is opened. Such an accident should be detected during the operation and properly repaired.

The operations in which the bladder is particularly likely to be injured are vaginal hysterectomy, anterior colporrhaphy, amputation of the uterine cervix and total abdominal hysterectomy.

c. External trauma: External trauma is most commonly due to violent coitus in cases of young, immature girls or in cases of maldevelopment of the genital tract. Mahfouz, in his series of 400 cases of genital fistula, described 10 cases in which roughness on the part of the husband in attempting to force an opening into the vagina had resulted in vesicovaginal or rectovaginal fistula. Some of these girls had vaginal atresia.

Neugebauer in 1899 reported 150 collected cases of fistula due to coitus. A perineorectal fistula due to coitus with an intact hymen was reported by Rawls in 1915. Schepetinsky reported in 1930 a case of gynatresia in which injury to the urethra occurred.

Mahfouz reported the case of a 10-year-old girl who introduced a small basket made of interwoven fibers, measuring 7 by 4.5 cm. when dried, into her vagina. It was left there for several months, during which time it ulcerated through the vesicovaginal septum, causing a large fistula. The hymen was not torn.

In this series there were 2 cases of accidental vesicovaginal fistula. One was caused by an accidental fall from a staircase, a nail piercing through the vagina into the bladder. The fistula was situated in the anterior vaginal wall and had a small, clean-cut opening. It was of six months' duration and had failed to heal spontaneously.

The second case was that of a woman who had a combined vesicovaginal and rectovaginal fistula. It was caused by a sharp stick used by a jealous husband for punishing his wife. The stick was thrust through the rectum, penetrating the vagina as well as the bladder. The rectovaginal fistula was successfully repaired, but the vesicovaginal fistula, which admitted two fingers, recurred after vaginal repair.

3. *Pathologic:* The most common cause of vesicovaginal fistula is extension of carcinoma of the cervix into the base of the bladder, with ulceration and necrosis. At the K. E. M. Hospital, Bombay, it is not unusual to come across vesicovaginal fistula due to malignant disease of the cervix, because of ignorance and neglect on the part of the patient to seek advice until the very late stages.

Ulceration and sloughing of the vagina and the base of the bladder by application of caustics is a rare cause. Similarly, tuberculosis of the cervix and gumma are rare causes.

The application of radium for carcinoma of the cervix sometimes results in a fistula. If the fistula occurs within a few days of the application, it is due to tissue necrosis caused by it. When, however, it occurs after some time it is generally due to extension of the growth, and radium is not the cause.

Etiologic Factors in Fecal Fistulas.—Rectovaginal: In this series there were 15 cases of rectovaginal fistula, in 7 of which the lesions were combined vesicovaginal and rectovaginal. Among these 15, 2 were congenital, 9 were due to obstetric trauma, 1 was due to surgical trauma and 3 were due to external trauma.

Congenital: Congenital rectovaginal fistula is also uncommon. In some cases there is atresia of the anus, and the rectum then opens directly into the posterior vaginal wall. In this series there were 2 cases. In both the rectum and the anal canal were normally developed. The opening in the posterior vaginal wall was just above the hymen, and there was an oblique channel communicating with the rectum about 1½ inches (3.7 cm.) above the anal canal.

Traumatic: (a) Obstetric trauma: Sloughing resulting from pressure necrosis accounts for a large percentage of urinary fistulas but is not a common cause of rectovaginal fistulas.

A rectovaginal fistula following difficult labor is more often due to complete tear of the perineum extending for some distance into the rectum. The perineal tissue unites by granulation tissue, leaving a small rectovaginal communication above it.

(b) Surgical trauma: Rectovaginal fistula following a surgical operation is less frequent than is vesicovaginal fistula. The most common cause of surgical rectovaginal fistula is trauma to the rectum during colpoperineorrhaphy.

In this series there was 1 case in which the rectal wall had been included in through-and-through suturing of the perineum torn during parturition. The rectal wall included sloughed, causing a fistula on the fifth day after repair.

(c) External Trauma: There were 3 cases of fistula due to external trauma, in 1 of which occurred the combined vesicovaginal and rectovaginal fistula that has been described.

The patient in the second case was a woman of menopausal age. She had had some illness during which severe constipation occurred. The hard, scybalous masses had to be scooped out from the rectum, and the rectal wall was damaged during this process. There was a small opening in the lower third of the posterior vaginal wall. Repair was undertaken, but the fistula recurred on the tenth day.

The third patient was an unmarried woman who was in the habit of masturbating with a wooden sewing thread reel. On one occasion the reel slipped into the vagina. Foul vaginal discharge continued for six months, when on rectal examination part of the reel was felt in the anterior rectal wall. On removal of the reel a rectovaginal communication was detected, caused by the gradual burrowing of this foreign body into the rectum.

Pathologic Causes: There was no case of rectovaginal fistula due to pathologic infiltration or ulceration in this series. In cases of carcinoma of the cervix a rectovaginal fistula sometimes occurs, either through direct spread of the malignant process or owing to faulty application of radium.

Venereal disease of the rectum occasionally causes a rectovaginal fistula.

Enterovaginal, Enterouterine, and Enterotubal Fistulas. — There was no instance of enterovaginal, enterouterine or enterotubal fistula in this series.

Utero-Abdominal Fistula.—This type of fistula occurs after abdominal operation. The common causes are (1) cesarean section; (2) tuberculous inflammation of the genital tract; (3) abdominal drainage during the acute stage of pelvic infection, and (4) the use of nonabsorbable suture material in the presence of infection.

The usual history is that the abdominal wound either fails to heal completely or, if it heals primarily, a [illegible] fluctuating swelling appears later, [illegible] of the menstrual p[illegible] [illegible]ime may be incised or may burst spontaneously, after which menstrual discharge wells out of it at subsequent periods.

There were 2 cases, in 1 of which the lesion was a classic uteroabdominal fistula discharging menstrual blood. In the other, it was a sinus leading upto the uterine wall but not communicating with the cavity.

The utero-abdominal fistula resulted after cesarean section and was of one year's duration. During each menstrual period the discharge oozed out from the fistula, but during the intermenstrual period there was only a slight purulent discharge. The fistulous tract was dissected up to the uterine wall, and a mass of nonabsorbable suture material was detected and removed. The opening in the uterine cavity was pared and closed.

The utero-abdominal sinus occurred ten years after an abdominal operation, the nature of which was not known. The sinus was traced to the anterior uterine wall at the level of reflection of the uterovesical peritoneum. There were dense adhesions in the pelvis, and a difficult subtotal hysterectomy was done. The patient died as a result of operative shock on the second day.

Combined Urinary and Fecal Fistulas: There were 7 cases of combined urinary and fecal fistula. One fistula was due to deliberate external trauma by a sharp stick thrust through the rectum into the vagina and bladder; the remaining 6 were caused by prolonged and difficult labor.

Treatment.—The evolution of the present-day treatment has already been described. The cure of genital fistulas is dependent on many factors, and it is only after due consideration of the associated conditions that a method can be selected. Chief among the associated conditions are: (1) the cause; (2) the type of fistula; (3) the size of the lesion; (4) the situation with reference to the internal urinary meatus, the ureteral orifices, and the cervix and its accessibility; (5) the degree of mobility or fixity, either by scar tissue or to the bony pelvis at some point; (6) the urethral wall and its permeability; (7) the duration of the fistula; (8) associated complications, such as destruction of the vaginal walls with scarring of perivaginal tissues, multiple urinary fistulas or associated rectovaginal fistula, pelvic inflammation or impaired renal function.

The best time to operate on a genital fistula is two to three months after confinement. Before repair is undertaken, any local infection should be adequately treated. Renal function should be tested by examining the blood for urea. Intravenous pyelographic study is necessary to note the function of the kidneys as well as that of the kidney pelvis and ureters. Dilatation of the ureters and hydronephrosis can be thus detected. Pyelographic study is important before the surgeon undertakes transplantation of the ureters into the sigmoid or implantation into the vagina.

A classification of the different possibilities for the cure of urinary fistulas is as follows:

1. Spontaneous healing.
2. Simple denudation of the edges of the fistulous opening and suturing.
3. Flap-splitting operations.
4. Use of a flap of vaginal mucosa to cover the opening in the bladder.
5. Use of a flap of adjacent vaginal wall or skin to cover the opening in the vaginal wall.
6. Closure of the vagina (colpocleisis).
7. Closure of the vesical opening by suprapubic cystotomy.
8. Transperitoneal opening.
9. Utilization of the rectum as a urinary receptacle.

Spontaneous Healing: Whenever a fistula is seen immediately or within a few weeks after delivery, there is a good chance that spontaneous healing will occur. Even a large fistula or one situated high in the fornix may heal spontaneously. In this series there was 1 of the size of a rupee, situated in the right lateral fornix and partially extending onto the anterior surface of the cervix, which healed spontaneously after six weeks' treatment with a self-retaining catheter. In this series there were 6 cases of spontaneous healing,[4] fistulas having been caused by difficult labor and 2 having followed operation. In the first 2 cases the patient was kept in Fowler's position with a self-retaining catheter. A daily vaginal douche and bladder lavage were given to keep the vagina and the bladder clean. Urinary antiseptics were also given. In the last 4 cases, the vaginal douche, the urinary antiseptics and Fowler's position were discarded and only a self-retaining catheter was employed.

Simple Denudation of the Edges and Suturing: This method was introduced by Marion Sims and for a number of years was the only method in use for vesicovaginal fistulas. There are two methods of denudation. In one method, a strip of tissue down to but not including the bladder mucosa is excised all around the fistulous opening. In the other, an incision is made all around the fistulous opening, and the vaginal mucosa is dissected up for a short distance all around. In both methods the bladder is sutured separately, with care not to include the bladder mucosa, by interrupted sutures. The vaginal mucosa is then sutured. In this series this method was not employed.

Flap-Splitting and Mobilization of Bladder: Free mobilization of the bladder from the vagina and the surrounding scar tissue was an important advance in the treatment of vesicovaginal fistula. When the bladder is freely mobilized the fistulous margins are approximated without tension on the sutures, and usually a second layer of sutures burying the first layer can be inserted.

The mobilization can be effected either from *within outward* by incising around the fistulous opening and separating the bladder from the vagina from the edges of the fistula outward, or from *without inward* by incising the vaginal wall some distance away from the fistula and mobilizing the bladder towards the fistulous opening.

In flap-splitting from *within outward* a circular incision is made around the margin of the fistula and the bladder is carefully dissected away from the vagina as far outward as possible. The incision around the fistulous opening is preferably ¼ inch (0.6 cm.) from the margins, leaving a little vaginal wall with the scar tissue in the bladder flap. With this type of incision, the tissue cleavage between the bladder and the vagina is more easily exposed and separation is possible without buttonholing the bladder or tearing the bladder margins.

Flap-splitting from *without inward* is particularly useful when the fistula is fixed by scar tissue. A longitudinal incision is made for about 1½ inches (3.7 cm.) above and below the fistulous opening, and the bladder is dissected some distance away from the opening and then gradually inward toward it. The cleavage between the vagina and the bladder is better obtained some distance away from the scar-fixed opening, and dissection toward it is then comparatively easy without damaging the bladder wall.

Use of a Flap of Vaginal Mucosa to Cover the Opening in the Bladder: This method is advocated for large vesicovaginal or vesicourethrovaginal fistulas when mobilization of the bladder is not possible because of extensive scar tissue. The nutrition of the flaps is not insured, owing to scar tissue, and they usually slough after a few days. Because of the uncertainties associated with this operation, no patient was treated by this method.

Use of a Flap of Adjacent Vaginal Wall or Skin to Cover the Opening in the Vagina: There were a few cases in which it was not possible to approximate the vaginal margins. Skin flaps or vaginal wall flaps were not utilized to cover the defect in the vagina. The vaginal wall closed later by granulation tissue.

Closure of Vagina (Colpocleisis): This is a very unsatisfactory method. The vagina is completely closed and, with the bladder, forms a recept [illegible] In

1 case in this series, a case of combined vesicovaginal and rectovaginal fistula, colpocleisis was done. The urine was voided for a few weeks after the operation through the rectum, but the vagina and the rectovaginal opening became blocked by phosphatic accretions, causing great distress to the patient. Eventually the vaginal wall had to be opened to allow the urine to drain through it.

Closure of Bladder Opening by Suprapubic Cystotomy) This is indicated when vaginal repair is not possible owing to narrowing of the vagina by extensive scarring. Unless the fistula can be brought nearer the surface, great difficulty will be encountered in suturing the bladder opening and Mahfouz has rightly pointed out that it is in these cases that extensive scarring has immobilized the fistula.

Transperitoneal operation appears to be a comparatively easy procedure, but difficulty arises during mobilization of the bladder from the scar tissue binding it down.

In this series neither of the aforementioned two methods was attempted in any of the cases, and there were 6 cases in which vaginal repair was not possible, but in these cases transplantation of the ureters into the sigmoid was preferred.

Transplantation of the Ureters into the Sigmoid: Transplantation of the ureters into the bowel cannot in fact be regarded as a method of curing a vesicovaginal fistula. It is an acknowledgement of failure on the part of the gynecologist to effect a closure by local repair in any series of urinary fistulas.

Neither the large size of a fistula nor the situation of the fistula in a comparatively inaccessible position is an indication for transplanting the ureters without earnest attempts at local vaginal repair. For inaccessible fistulas a paravaginal incision (Schuchardt's) is of value. Fistulas that appear difficult for vaginal repair not infrequently heal after careful mobilization of bladder and suturing. In this series there were 2 large fistulas, situated high in the vagina, which appeared to be suitable for transplantation only, but both were healed by local vaginal repair.

During the past five years transplantation has never been done without at least one attempt at local vaginal repair.

There are, however, cases in which, apart from the size of the fistula, there is such extensive fibrosis, annular and cartilaginous, that the fistula is inaccessible. In such cases transplantation to relieve incontinence must be undertaken without local vaginal repair.

In almost every case of transplantation there is immediate postoperative infection of the kidneys. It is generally stated that the life of the patient after a transplantation is much shortened, owing to repeated urinary infection from the bowel. As the patients in this series were from distant rural areas, there has been no opportunity of observing the effects of transplantation.

Implantation of the Ureter into the Bladder: There was 1 case of ureterovesicovaginal fistula in which local vaginal repair healed the vesical fistula and three weeks later transperitoneal implantation of the ureter into the bladder was done.

Symptoms and Diagnosis. — Incontinence of urine usually appears within two weeks when the slough separates, but it may be noticed immediately after delivery if direct trauma has been caused. Owing to a continuous flow of urine over the vulva excoriations appear on the vulva, with itching.

A vesical fistula can be easily seen on speculum examination, and a sound passed through the urethra can be seen coming out from the bladder opening. In a small vesical fistula, a ureteral fistula, or a fistula associated with extensive fibrosis, visualization of the fistula or its localization by passing a sound through the urethra may be difficult. In such cases a colored fluid (methylene blue solution), is injected into the bladder through a rubber catheter, and its flow can be watched by passing a speculum into the vagina. In the case of vesicovaginal fistula the fluid will be seen flowing through the fistulous opening into the vagina. In the presence of vesicocervicovaginal fistula it will be seen coming through the cervix, while with ureterovaginal fistula without involvement of the bladder the fluid will not be seen coming out into the vagina.

SUMMARY

Genital fistulas in women are discussed from the historic, etiologic, pathologic and therapeutic points of view. The symptoms and the diagnostic criteria are outlined.

ZUSAMMENFASSUNG

Fisteln der weiblichen Geschlectsorgane werden vom historischen, aetiologischen, pathologischen und therapeutischen Gesichtspunkt aus eroertert. Die Symptome und die diagnostischen Markmale werden beschrieben.

RÉSUMÉ

On discute de la fistule génitale chez la femme au point de vue historique, étiologique, pathologique et thérapeutique. On appuie sur les symptômes et le diagnostic.

RIASSUNTO

Sono state prese in considerazione le fistole genitali nella donna dal punto di vista storico, etiopatologico e terapeutico, con particolare riguardo ai sintomi e ai criteri diagnostici.

SUMÁRIO

As fistulas genitais em mulheres são discutidas do ponto de vista historico, etiológico, patológico e terapeutico. Os sintomas e o critério para o diagnostico são esboçados.

RESUMEN

Se discuten las fístulas genitales en mujeres desde los puntos de vista histórico, etiológico, patológico y terapéutico. Se señalan los síntomas y el criterio disgnóstico.

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An Accurate Surgical Approach to the Appendix

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McBURNEY in 1894 described his method of approach for removal of the appendix as follows: "The incision in the skin is an oblique one about four inches long. It crosses a line drawn from the anterior iliac spine to the umbilicus nearly at right angles about one inch from the iliac spine, and is so situated that its upper third lies above that line.

"The incision of the aponeurosis of the external oblique is a little shorter, and practically merely separates the fibres of that muscle and its tendon without cutting them. The section of the internal oblique and transversalis muscles follow, cutting the muscular fibres nearly at right angles to their course, and is completed only at the central half at first."

McBurney did not state the point at which section of the internal oblique and transversalis muscles was performed.

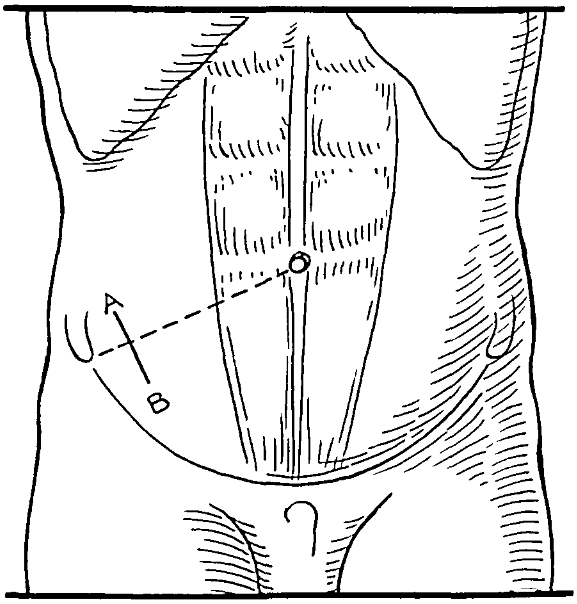
Ravdin, in his book *Kirschner's Operative Surgery*, described the McBurney-Sprengel lateral gridiron incision as follows: "The skin incision is made in the direction of the fibres of the external oblique muscle. The incision should not be made too great a distance from the anterior iliac spine, but only one to three cm. to its medial side, with about one-third of the incision above, and two-thirds below the point. As a rule the incision should be not less than six cm. long.

"As a rule, the region of the incision in the external oblique includes the transition of the muscular portion into the aponeurosis. The internal oblique muscle is then split at the midpoint of the external wound and parallel to the direction of the muscle fibres."

Ravdin, therefore, depends upon his cutaneous incision to determine the point at which the internal oblique muscle is split.

In the presence of acute appendicitis the surgeon attempts to locate the site of the appendix at the point of maximum tenderness as determined by physical examination. The incision is then made to expose this area. This point of maximum tenderness may be difficult to localize accurately, may not be the correct site, and is not present when an interval appendectomy is done.

With the McBurney-Sprengel incision, the base of the appendix is at times much higher or lower than the opening into the peritoneal cavity. The only aim, as we see it, in using this approach is to enter the



Line of skin incision

Fig. 1.—Skin incision is made 1 to 3 cm. medial to the anterior iliac spine and parallel to fibers of external oblique muscle. Midpoint of this incision is on a level with anterior iliac spine.

From the Department of Surgery, Chicago Medical School, the Cook County Hospital and Mount Sinai Hospital.

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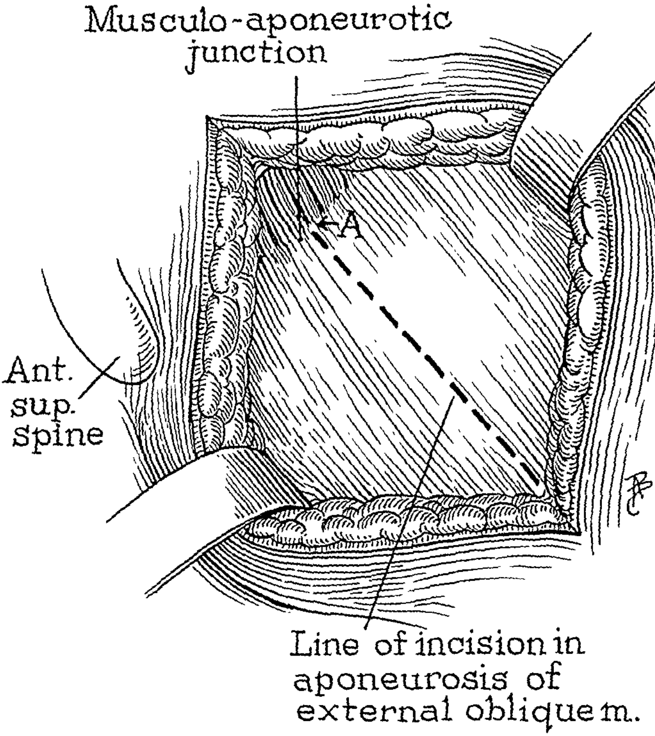
Musculo-aponeurotic junction
A
Ant. sup. Spine
Line of incision in aponeurosis of external oblique m.

Fig. 2.—Aponeurosis of external oblique muscle is opened parallel to its fibers and musculoaponeurotic junction demonstrated (*A*). This point is crux of operation.

peritoneal cavity in the vicinity of the appendix.

We have found that there is an apparent relation between the musculo-aponeurotic juncture of the external oblique muscle and the level of the base of the appendix. This was determined by measurements taken when the McBurney-Sprengel type of approach was used.

The following operative procedure was used: The McBurney-Sprengel lateral gridiron incision was made through the skin. The aponeurosis of the external oblique muscle was incised parallel to its fibers from the musculo-aponeurotic juncture, distally. A line was drawn from the anterior iliac spine to the umbilicus. The distance from this line to the musculo-aponeurotic juncture was measured. We observed that a musculo-aponeurotic juncture above the line denoted a high-lying appendix; similarly, a juncture below the line indicated a low-lying appendix.

In 200 consecutive [illegible]

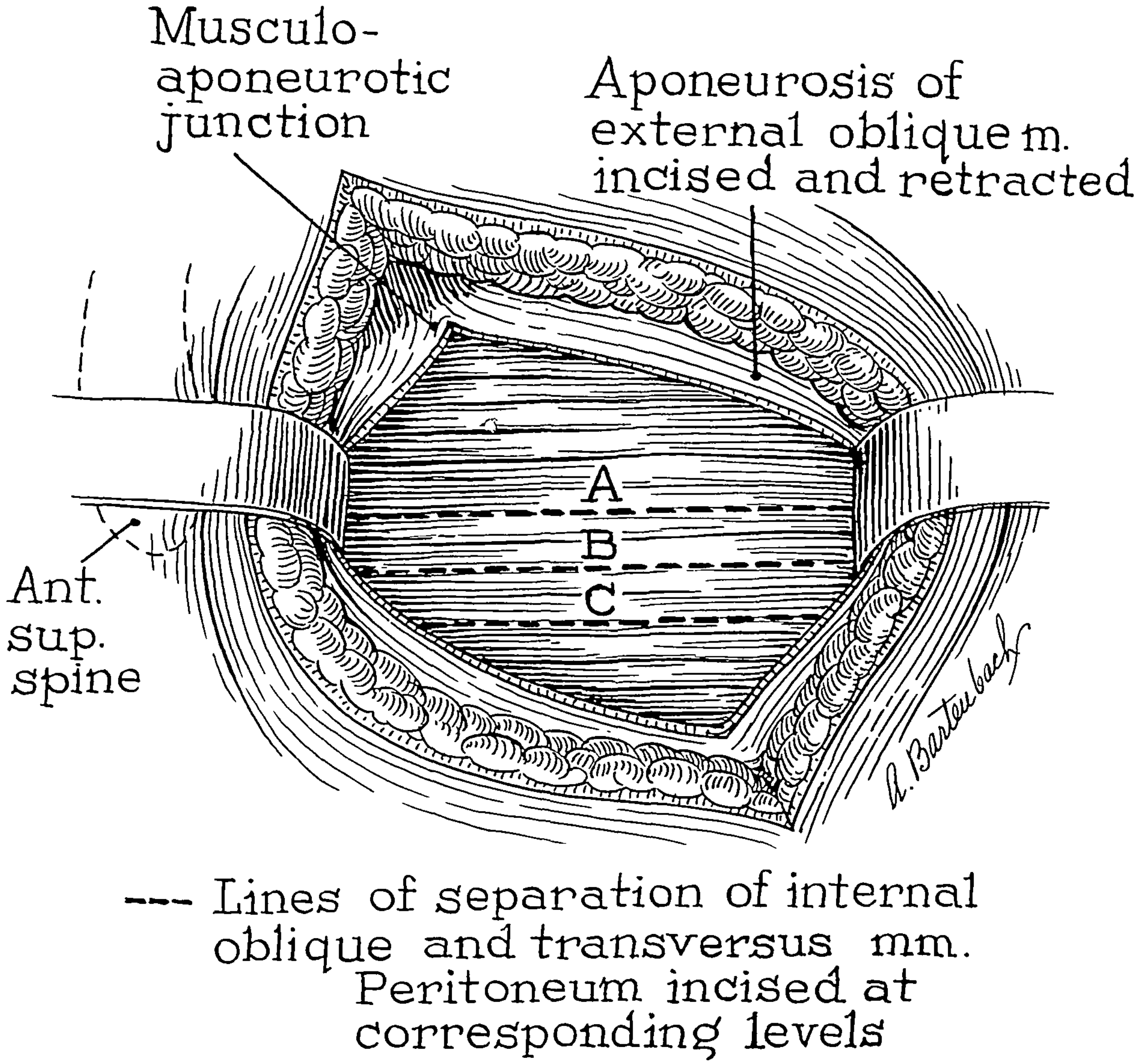
Musculo-aponeurotic junction
Aponeurosis of external oblique m. incised and retracted
A
B
C
Ant. sup. spine
A. Bartenbach
--- Lines of separation of internal oblique and transversus mm. Peritoneum incised at corresponding levels

Fig. 3.—Internal oblique and transversus muscles and peritoneum are opened transversely. For children under 6 years of age opening is made 3 cm. distal to musculo-aponeurotic junction *(A)*; up to age 15, opening is made 4 cm. from musculo-aponeurotic junction *(B)*; for patients over 15, 5 cm. from musculo-aponeurotic junction *(C)*.

observed that the average juncture point was 2.1 cm. above the line and 1.9 cm. below it. The longest distance was 2.5 cm. above and 3 cm. below the line.

Using the musculo-aponeurotic juncture as a starting point, we separated the internal oblique and transversalis muscles parallel to their fibers at various levels distally. The most accurate distance from the musculo-aponeurotic juncture for separation of the internal oblique muscle, the transversalis muscle and the peritoneum varied with the age of the patient. In patients under 6 years of age it was 3 cm.; in patients between 6 and 15 years of age, 4 cm.; and in patients over 15 years of age, 5 cm., distal to the musculo-aponeurotic junction. The peritoneum was incised at the distance indicated in a transverse direction to avoid injury to the urinary bladder, especially when there was a low-lying appendix.

The location of the incision through the internal oblique muscle, the transversalis muscle and the peritoneum is of the utmost importance in accurate location of the base of the appendix. The musculo-aponeurotic junction of the external oblique muscle is the crucial starting point.

The following technic has been adopted. An incision about 5 cm. is made 1 to 3 cm. medial to the anterior iliac spine and parallel to the fibers of the external oblique muscle. The midpoint of this incision is on a level with the anterior iliac spine. The aponeurosis is opened and the musculo-aponeurotic junction demonstrated. This point having been determined, and due consideration having been given to the age of the patient, the internal oblique and transversalis muscles are separated by blunt dissection parallel to their fibers. This will vary from 3 to 5 cm. distal to the musculo-aponeurotic juncture. If necessary, the skin and aponeurotic incisions may be further adjusted. The peritoneum is opened transversely.

In 200 consecutive operations performed by this technic the base of the appendix presented itself in 92.5 per cent of the cases. The youngest patient was 2 years old and the oldest 65. There were 108 male and 92 female patients.

SUMMARY

The location of the base of the appendix varies. It may lie high or low in the peritoneal cavity. There is, apparently, a direct relation between the site of the base of the appendix and the musculo-aponeurotic juncture of the external oblique muscle. A high juncture point denotes a high-lying appendix; a low juncture point, a low-lying appendix. The location of the incision through the internal oblique and transversalis muscles and the peritoneum is most important for a more accurate surgical approach to the appendix. The incision through these muscles and the peritoneum should be 3, 4 or 5 cm. distal to the musculo-aponeurotic junction, respectively, in patients under 6 years of age, between 6 and 15 years of age and over 15 years of age. The incision through the peritoneum should always be made in a transverse direction to avoid entering the urinary bladder, especially in the presence of a low-lying appendix.

RÉSUMÉ

La base appendiculaire varie dans sa situation. On la trouve parfois très haute dans''a cavité péritonéale et parfois basse. Apparemment il y aurait relation directe entre sa situation et la fonction musculo-aponévrotique du grand oblique. Une jonction haute égale un appendice haut situé; une jonction basse, un appendice bas situé. La situation de l'incision à travers le petit oblique, le transverse et le péritoine doit être bien choisie: c'est important pour la présision de la voie d'abord de l'appendice. L'incision à travers ces muscles et le péritoine devrait être à 3 cms distal de la jonction aponévrotique pour les patients au dessous de 6 ans; à 4 cms pour les patients entre 6 et 15 ans et 5 cms au dessus de 16 ans. L'incision à travers le péritoine devrait être faite en direction transverse pour éviter d'entrer dans la vessie . . . surtout lorsque l'appendice est bas.

ZUSAMMENFASSUNG

Der Sitz der Basis des Wurmfortsatzes wechselt. Sie kann hoch oder tief in der Bauchhoehle liegen. Offenbar gibt es eine direkte Beziehung zwischen ihrer Lage und dem Sitz der Verbindung der Muskel- und Aponeurosenanteile des aeusseren schraegen Bauchmuskels. Eine hochliegende Muskelsehnengrenze weisst auf eine hohe Lage des Wurmfortsatzes hin und umgekehrt. Die Stelle des Einschnitts durch den inneren schraegen und den queren Bauchmuskel und durch das Bauchfell ist fuer den richtigen chirurgischen Zugang zum Wurmfortsatz aeusserst wich-

tig. Der Einschnitt durch die drei Muskeln und das Bauchfell sollte in folgenderweise angelegt werden: bei Kindern unter sechs Jahren 3 cm distal von der Verbindung des Muskels mit der Aponeurose, bei Kinder zwischen sechs und fuenfzehn Jahren 4 cm distal von der Muskelsehnengrenze und bei Kranken ueber sechzehn Jahren 5 cm distal davon. Der Schnitt durch das Bauchfell sollte stets in der Querrichtung erfolgen, um, besonders bei tiefliegender Appendix, eine Verletzung der Harnblase zu vermeiden.

RESUMEN

La situación de la base del apéndice varía. Puede ser alta o baja en la cavidad paritoneal. Existe aparentemente una relación directa entre su sitio y la unión musculoaponeurótica del músculo oblícuo externo. Un punto de unión alto indica situación apendicular alta, un punto de unión bajo situación apendicular baja. La incisión a través del oblícuo externo y el transverso y peritoneo es muy importante para una vía apendicular quirúrgica más exacta. Dicha incisión debe ser de 3, 4 o 5 cm. distal a la unión musculoaponeurótica según se trate de pacientes menores de 6 años de edad, entre los 6 y los 15 años de edad y mayores de 16 años de edad. La incisión peritoneal debe hacerse siempre en dirección transversa para no herir la vejiga, especialmente en presencia de un apéndice de situación baja.

RIASSUNTO

La sede dell'appendice è varia, giacchè può essere a diversa altezza nel cavo peritoneale. Apparentemente c'è una relazione diretta fra tale sede e la linea di giunzione muscolo-aponeurotica dello obliquo esterno dell'addome: una sede alta o bassa della linea denoterebbe una sede alta o bassa dell'appendice. La sede dell'incisione sui muscoli obliquo interno e trasverso e sul peritoneo ha molta importanza per una corretta via d'accesso all'appendice. Tali incisioni debbono avere le seguenti caratteristiche: quella sui muscoli deve essere praticata a 3 cm. di distanza dalla linea muscoloaponeurotica nei pazienti sotto i 6 anni di età, a 4 cm. in quelli fra i 6 e i 15 anni, a 5 cm. sopra i 16 anni; l'incisione sul peritoneo dovrebbe sempre essere trasversale per evitare di interessare la vescica, specie quando l'appendice sia in sede bassa.

SUMÁRIO

A localização da base do apendice varia. Po'de estar no alto ou em baixo da cavidade peritonial. Ha, aparentemente, uma relação diréta entre seu local e a junção musculo-aponevrotica do musculo grande obliquo. Um alto ponto de junção denóta um apendice altamente situado, uma baixa junção indica um apendice baixo. A locação da incisão atravez do pequeno obliquo, do transverso e do peritonio é de alta importancia para uma abordagem cirurgica do apendice. A incisão atravéz desses musculos e do peritoneo deve ser como segue:—3, 4 ou 5 cms. distal ao encontro musculo-aponevrótico, respectivamente, em pacientes abaixo de 6 anos de idade, entre 6 e 15 anos de idade e acima de 16 anos de idade. A incisão através do peritoneo deve ser feita sempre em uma direção transversa para evitar a bexiga, especialmente em presença de apendice baixo.

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Prolapsed Antral Mucosa

Report of a Case

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SEYMOUR, WISCONSIN

PROLAPSED antral mucosa is a symptom complex that should interest both the internist and the surgeon. It is a condition which has varying symptoms in various degrees of severity.

The first case of prolapse of the gastric mucosa into the duodenal bulb was reported in 1911 by Von Schmieden. In 1926 Eleason, Pendergrass and Wright first described the roentgen signs. Since then fewer than 50 cases have been reported which were uncomplicated by other coexistent abnormality in the stomach or the duodenum. Of these 30 were proved at operation or autopsy.

The causes, symptoms and treatment will be briefly discussed, after which 1 case, verified by operation, will be reported. The cause of prolapsed antral mucosa has been debated for the past decade. Many theories have been advanced. At present the etiologic factors are not clear, but certain truths have been uncovered. It has been reported that the condition occurs in about 1 per cent of all patients with disease of the gastrointestinal tract.

Some of the theories advanced as to the cause of this condition are as follows: 1. Hypertrophy of gastric mucosa due to preexistent chronic inflammatory irritation and preceding the actual prolapse. 2. Mild inflammatory states of the gastric rugae. These hypertrophied folds are forced into the duodenum peristaltic waves. 3. Changes in the blood proteins, which are often reflected in the wall of the gastrointestinal tract, producing edematous and pendulous gastric folds. 4. Abnormal gastric peristalsis initiated by neurogenic or chemical factors or both. 5. Emotional factors, such as worry, anxiety, fear, excitement and anger. 6. Chemical factors, such as coffee, tobacco and alcohol. 7. Congenital variations in the gastric mucosa, which may be hypermobile.

Symptoms.—The symptoms of prolapsed antral mucosa are varied, never characteristic, and clinical diagnosis is difficult. The diagnosis must be confirmed by roentgenologic study. Objective physical signs are indecisive except that a tumor mass may be palpable in the pyloric region which has a soft doughy consistency, is freely movable and at times can be felt when the prolapse is reduced. The symptoms in order of frequency are:

1. Epigastric pain or distress in the upper part of the abdomen. This varies considerably in degree and in time of occurrence. It is usually aggravated by food and bodily exertion. The pain may be cramping at times.
2. An abnormal sense of fullness after the consumption of a small amount of food.
3. Gaseous eructations, bloating and heartburn.
4. Nausea and vomiting, varying in degree in every patient.
5. Associated nervousness. This condition is almost invariably found in nervous persons.
6. Hemorrhage. This may be either hematemesis or melena and may be slight or exsanguinating.
7. Loss of weight, which may be slight or marked.
8. Normal results from gastric analysis despite the presence of these conditions.

Roentgen Data.—1. There is an inconstant deformity of the duodenal bulb. The bulb assumes a mushroom appearance, with concavity of the [illegible] wh[illegible] [illegible]he

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gastric mucosa is invaginated into it.

2. Mucosal folds are seen passing from the stomach through the pyloric canal into the duodenum. These are visualized as multiple negative linear filling defects.
3. The appearance of the bulb varies as the gastric mucosa slides back and forth through the pylorus.
4. When the prolapse is temporarily reduced, redundant mucosa may pile up into the antrum, assuming a circular or transverse direction rather than the usual longitudinal one.
5. Peristaltic waves pass through to the pylorus in a normal manner.
6. There is usually no narrowing or elongation of the pyloric channel.
7. No ulcer niche is demonstrable in the pylorus or the duodenum.
8. There is no irritability of the duodenal bulb.
9. There is occasionally gastric retention.

A roentgen diagnosis may be made only by repeated observation since the mucosal prolapse may be intermittent. The roentgen pattern is variable.

Treatment.—Medical treatment is satisfactory for the vast majority of patients. Frequent small feedings of a bland diet are usually advised. Rest is important; even bed rest is sometimes necessary. Alcohol, tobacco, coffee, spices and condiments should be eliminated. Antispasmodics, such as tincture of belladonna, and sedatives in the form of phenobarbital have been used. Many of the mild conditions will subside under this medical regime.

Indications for surgical intervention are determined by the persistence, severity and intractability of symptoms to medical management. The principal reasons for advising it are (1) severe persistent pain; (2) pyloric obstruction producing recurrent vomiting and loss of weight, and (3) repeated gross gastrointestinal hemorrhages or secondary anemia.

Surgical Technic.—A midline incision is employed. Then an incision is made transversely through the antrum, 5 cm. proximal to the pyloric canal. The redundant mucosa is grasped by Allis forceps and excised with scissors. The cut edges of the mucosa are united with a No. 00 chromic catgut suture, and this is anchored to the muscularis in the line of the incision. When the pyloric muscle is contracted it should be sectioned. Some authorities advise subtotal gastrectomy.

REPORT OF CASE

A white woman aged 42, married, was admitted to the hospital (St. Vincent's) on May 18, 1950. The history included a left inguinal hernioplasty in 1936, an appendectomy in 1940 and a tubo-ovarian operation in 1948. The patient first complained of epigastric distress in January 1949. This distress was described as a pressure in the epigastrium. There were numerous gaseous eructations. As the gas increased the pain became more severe. At times there was acute cramping pain one-half to one hour after eating. It was necessary to administer medicaments to relieve the pain, and occasional hypodermic injections were necessary. The bowels were regular. The patient's weight had decreased from 168 to 140 pounds (76.2 to 63.5 Kg.). She had been treated under an ulcer regime for several months without relief. The temperature was 98.4 F., the pulse rate 76 and the respiratory rate 22. The blood Kahn test gave a negative result. The cell count per cubic millimeter of blood revealed 4,060,000 erythrocytes, with 79 per cent hemoglobin, and 4,800 leukocytes. Urinalysis revealed no abnormality. The blood pressure in millimeters of mercury was 180 systolic and 80 diastolic. Roentgenograms of the upper part of the gastrointestinal tract on May 19, 1950, revealed that the barium entered the stomach readily. Prominent gastric rugae were visualized, especially in the antral portion of the stomach close to the lesser curvature. The stomach was normal in size, tonic and pliable, with active peristalsis and no organic filling defect except for mild distortion of the lesser curvature in the antral portion, apparently due to prominent gastric rugae. Peristalsis passed through this area of deformity. There was no hiatus hernia. The pyloric opening was immediate. The duodenal bulb revealed no penetrating or constricting deformities, but there were prolapsed filling defects in the base of the duodenal bulb, the base of which had a mushroom appearance, notably indicative of prolapse of the antral gastric mucosa. The second, third and fourth portions of the duodenum revealed no abnormality. The three-hour film showed the stomach empty, the barium column continuous and the head of the column in the distal part of the transverse colon. The roentgen impression was: 1. The prominent gastric antral and duodenal bulb mucosal pattern was compatible with a diagnosis of antral gastritis and duodenitis. 2. Prolapse of the antral gastric mucosa into the duodenal bulb was apparent.

A recheck of the upper part of the gastrointestinal tract by roentgen study on May 26 revealed that there was no appreciable change in the well-marked hypertrophic appearance of the antral gastric mucosa. Peristalsis passed through this area to the pyloric canal. There was mild prepyloric elongation, and the concave deformity of the base of the duodenal bulb, characteristic of prolapse of the antral mucosa remained unchanged. There was no other visible organic pathologic change in the stomach and no functional abnormality. At the three-hour examination the stomach was empty and the barium column continuous, with the head of the column in the ascending colon. The visualized terminal ileum appeared normal. The roentgen impression was that the prominent distorted gastric mucosa and the mushroom-shaped deformity of the base of the duodenal bulb represented antral gastritis with prolapse of the antral gastric mucosa into the base of the duodenal bulb.

Because of the severity of the pain, which required hypodermic injections for relief, and because diet, antispasmodics and sedatives failed to relieve the symptoms, it was decided that surgical intervention was necessary.

Operation was performed on May 31. The abdomen was opened through a midline incision. The antrum of the stomach was opened through a transverse incision 5 cm. proximal to the pylorus. The prolapsed antral mucosa was grasped with Allis forceps and excised. The two edges of mucosa were united with No. 00 chromic catgut, and a few sutures were anchored to the muscularis. The pylorus was examined and found to be normal. The anterior wall of the stomach was closed with a Connell suture followed by interrupted silk. The abdominal wall was closed in the usual manner.

Pathological Report—Gross: The antral mucosa showed hemorrhagic congestion and active chronic inflammatory change. The specimen of mucosal membrane measured 9 by 3.5 by 3 cm. The mucosal surface was somewhat hemorrhagic and partially eroded near one end. *Microscopic:* The glandular epithelium of the gastric mucosa and a portion of the submucosa were present. The muscularis and serosal coats were not present. The superficial columnar cells in some areas showed evidence of erosion. The submucosa in some areas showed capillary engorgement, with moderate infiltration of plasma cells and eosinophiles.

Course.—The patient made an uneventful recovery and was discharged from the hospital on June 11, the eleventh postoperative day. At the time of writing, Dec. 8, 1950 she is taking a general diet and is entirely free of her previous symptoms.

SUMMARY

An effort has been made to review the etiology, symptoms, diagnosis and treatment of prolapsed antral mucosa. A case is reported.

RÉSUMÉ

On s'efforce de passer en revue l'étiologie, les symptômes, le diagnostic et le traitement du prolapsus de la muqueuse "antrale". On en rapporte un cas.

ZUSAMMENFASSUNG

Der Verfasser bemueht sich, einen Ueberblick ueber die Aetiologie, die Symptome, die Diagnose und die Behandlung des Prolapses der Schleimhaut des Magenantrums zu geben und berichtet einen Fall.

RESUMEN

Se revisan etiología, sintomatología, diagnóstico y tratamiento del prolapso mucoso antral. Se da a conocer un caso.

RIASSUNTO

Viene discussa l'etiologia, la sintomatologia, la diagnosi e la cu [illegible]

della mucosa antrale—e ne viene riferita un'osservazione clinica.

SUMÁRIO

Um esfôrço foi feito para revêr a etiologia, sintómas, diagnóstico e tratamento do prolapse da mucósa antral. E' relatado um caso.

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Announcement

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The Executive Council of the United States Chapter and the Board of Trustees of the International College of Surgeons have unanimously approved the formation of an International Board of Occupational Surgery, the aims of which are (*a*) elevation of standards for the practice of occupational surgery, (*b*) conservation of the health of the worker after occupational injury, (*c*) official recognition of this specialty, (*d*) stimulation of interest in this field by students and members of the profession, and (*e*) cooperation in the establishment of facilities for graduate education in occupational surgery by means of residencies in hospitals affiliated with medical schools, or their equivalents.

Frederick W. Slobe, M.D., F.A.C.S., F.I.C.S., Chairman
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For further details, address Dr. Arnold S. Jackson, Secretary, United States Chapter, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10, Illinois.

A Modified T-Tube Drain

ELI SHERMAN JONES, B.S., M.D., F.A.C.S., F.I.C.S.

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DRAINING the common duct has been done by various methods. The most common one uses a tube through the stump of the cystic duct, or a T-tube placed into the common duct through a longitudinal incision in the duct. Each has its advocates, for good reasons.

The most generally accepted method in practice today is the use of a T-tube into the common duct. The tubes are made in various sizes and lengths of the T-arm. All are made of rubber.

For several years we had employed the usual T-tube and as a rule the patient complained of pain when the tube was removed. At times, also, drainage was not good. My associates and I always tested the tube with a syringe before inserting it, and in several instances we found that there was no opening between the T and the stem. We then split the T, removing the opposite wall from the stem side. We were amazed to find that in most of the tubes the opening entering the stem was about one-half the caliber of the stem, which, of course, determined the draining capacity. With great difficulty this opening was enlarged with scissors and the T-tube was inserted into the duct. We were then assured of the same draining capacity provided by the outer end of the tube.

We found that a tube cut as described, after the ends had been beveled, was much more easily inserted into the duct, with far less damage and trauma to the duct. The opposite duct wall had no foreign substance pressing against it. The only trauma to the duct was the incision and the contact of the rubber on half of the duct wall. Drainage was better than from the usual T-tube, and there was no more leakage around the tube. A roentgenogram taken after an injection of dye always showed a well-functioning tube. Removal of the tube is accomplished with greater ease and with much less discomfort to the patient than was encountered with the old type of T-tube, and no injury is done to the common duct in removing the tube.*

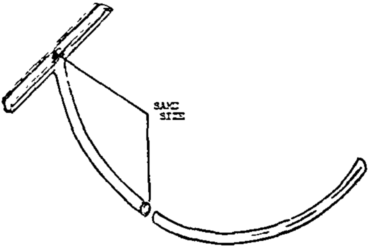
SUMMARY

A type of T-tube is presented which has the following advantages over other means of drainage: 1. It is easy to insert and remove. 2. It gives better drainage. 3. There is less trauma to the duct. 4. There is no pressure on the opposite wall of common duct. 5. There is less possibility of stricture.

RÉSUMÉ

Présentation d'un tube en T dont les avantages sur les autres drains sont les suivants.

1. Il est facile à mettre et a enlever.
2. Il y a moins de traumatisme du cholédoque.



Diagrammatic sketch of T tube (Davol).

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*The Davol Rubber Company now makes a T-tube (see illustration) which has the features described, having the opening into the T of the same size as the outer end of the stem.

Read at the Assembly of the International College of Surgeons, Buenos Aires, Argentina, August, 1950.
Submitted for publication.

3. Il y a moins de risque de rétrécissement.
4. Il draine mieux.

ZUSAMMENFASSUNG

Es wird ein T-foermiges Rohr beschrieben, das, verglichen mit anderen Drainierungsmitteln, die folgenden Vorteile bietet:

1. Es kann leicht eingefuehrt und entfernt werden.
2. Es drainiert besser.
3. Es verursacht geringere Schaedigung des Gallenganges.
4. Es wird kein Druck auf die gegenueberliegende Wand des Choledochus ausgeuebt.
5. Die Moeglichkeit von Strikturbildungen ist verringert.

RIASSUNTO

Viene presentato un modello di tubo a T che offre, sugli altri apparecchi di drenaggio, i seguenti vantaggi: 1. E'facile da applicare e da togliere. 2. Dà un miglior drenaggio. 3. Produce minor trauma al dotto. 4. Non esercita pressione sulla parete opposta del coledoco. 5. Dà minori probabilità di stenosi.

RESUMEN

Se presenta un tipo de sonda en T, que tiene sobre otros medios de canalización las ventajas siguientes: 1. Fácil de poner y quitar. 2. Proporciona mejor canalización. 3. Es menos traumática para el conducto. 4. No se produce presión sobre la pared opuesta del colédoco. 5. Existe menor posibilidad de estenosis.

SUMÁRIO

E' apresentado um tipo de tubo em T que tem as seguintes vantagens sobre os outros meios de drenagem: (1) E' facil de inserir e de remover. (2) Drêna melhor. (3) Ha menor trauma para o ducto. (4) Ha menor possibilidade de estenóse.

LA PRESSE MEDICALE

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Retropubic Prostatectomy

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OBSTRUCTION in the region of the prostate is produced by (1) hypertrophic or adenomatous condition of the prostate; (2) fibrosis of the prostate; (3) calculosis, or (4) carcinoma or sarcoma of the prostate.

In the present state of knowledge, surgical intervention is the only effective means of removing the obstruction. The beginning of this century marks the era of prostate surgery. The forty-five year-old Freyer's operation is now performed in one or two stages all over the world. Later, the perineal route was suggested. In 1931 the transurethral method was advocated, and since 1945 the retropubic procedure has been attracting the attention of urologists.

The mere fact that no fewer than four different methods have been suggested to deal with the same condition, namely, the obstructing prostate, means that none of them fulfills the requirements, i.e., (1) ease of operation, (2) a smoother postoperative convalescence and (3) less morbidity after the operation, with rapid return to normal health and urinary function.

The chief dangers of Freyer's operation were hemorrhage, a long stay in the hospital, slow healing of the suprapubic fistula and stenosis of the vesical neck. Various modifications have been suggested to combat these.

Perineal prostatectomy is really a surgical procedure; i.e., the gland is removed under direct vision and hemorrhage can be controlled. It requires a thorough knowledge of anatomy, a trained team and special instruments. I have assisted surgeons during perineal operations on the prostate. The technical difficulties and the postoperative morbidity—perineal fistula, rectovesical fistula, incontinence and the subsequent miserable condition of the patients in the short series of 5 cases were enough to deter me from employing this method.

The transurethral method is attended with a low mortality rate and a short hospital stay. I have not been able to use this method, because of lack of facilities. This operation also has such disadvantages as severe hemorrhage and inability to remove the entire gland (which necessitates repeated operations) and stricture of the urethra.

I have always used the suprapubic method in one or two stages. Aside from prolonged hospitalization, the chief complication I encountered was hemorrhage. Millins, in describing his new approach, emphasized the technic used to arrest the hemorrhage and secure a shorter and smoother postoperative period. As these were the very conditions that worried me, I gave the new method a trial. In a short personal series of 45 cases my expectations were wholly fulfilled.

Historical Data.—According to Millins, there are 4 records of extravesical prostatectomy in the medical literature prior to his work.

In 1909, Von Stokum reported 2 cases in which the prostate was removed through an incision in the capsule anteriorly. He packed the prostatic fossa and performed suprapubic cystostomy.

In 1924, Maier in Germany used an inguinal extravesical approach and cited 4 cases.

In 1933, Jacobs and Casper of San Francisco described a prevesical technic, by which the prostate was removed through a longitudinal incision and the bladder drained by a urethral catheter. Suprapubic fistulas developed on the

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eighth postoperative day, but these healed completely and the patient was discharged ten days later.

In 1936, Uteau and Leroy described a subpubic technic. Millins investigated this route. He found the approach too difficult, bloody and, in 2 cases of well-marked enlargement, "impossible."

Millins experimented with the retropubic route on the cadaver for eighteen months before attempting his first operation, which is now accepted as a sound procedure by urologists all over the world. It makes a direct attack on the obstruction and obviates surgical injury to the bladder, which has long been subject to surgical insult. The intact bladder is ready for action when the artificial drainage is removed.

I have used this method in 45 cases: 43 cases of adenomatous prostate (with 2 deaths), 1 case of fibrosis of the prostate and 1 case of calculous prostate.

Preoperative preparation — investigation of renal function, etc.—is carried out as usual. When indicated, urethral drainage of the bladder is done. In 3 cases suprapubic drainage had already been carried out elsewhere two or three months before the patients came under our observation. In 1 case we had to resort to this, as the patient was in low condition and needed prolonged urethral drainage.

In 4 cases the general condition and the renal function were good, so no preliminary drainage was used. Blood transfusion was employed during the operation for all the patients.

Technic.—In this short presentation I shall mention only the important steps of the operation.

Spinal or general anesthesia may be used. We used spinal anesthesia in 44 cases and general anesthesia in 1.

A vertical infra-umbilical incision exposes the cave of Retzius. The bladder is retracted upward. The loose fatty layer covering the capsule of the prostate is cleared. Bleeding from large veins in this layer is best checked by diathermy. Preliminary ligation of the capsular vessels is necessary, in case they happen to traverse the line of incision. The capsule is incised transversely or vertically. Transverse incision was used in the first 36 cases and vertical in the last 9. I am of the opinion that vertical incision is better, as hemorrhage is less severe and subsequent suturing in the deep cavity is decidedly easy. After incision of the capsule the adenoma is dissected out or enucleated, at first from the sides and then from the apex toward the bladder. Dissection in a difficult case can be done under direct vision. The prostatic cavity is packed with gauze, and attention is paid to the neck of the bladder. With the help of a retractor designed for the purpose by Millins, the interior of the bladder is inspected and hemorrhage from the neck of the bladder is controlled by sutures. A wedge from the middle of the posterior lip is removed to prevent future obstruction. In 2 cases this step was necessary. As a rule there is only oozing from the prostatic fossa after the pack is taken away. A No. 12 or 14 E catheter is passed through the urethra into the bladder. A small quantity of sodium citrate solution is injected through the catheter to prevent clot formation. The incision in the capsule is closed in two layers with chronic catgut. The cave of Retzius is drained after dusting with sulfa powder, and the abdominal wound is closed. Bilateral vasectomy is done as a routine at the end of the operation. No special instruments, such as self-retaining retractors, the boomerang needle, etc., are necessary. Millins' bladder neck retractor, however, is a very useful instrument, though it is not absolutely essential. Small curved Mayo needles are used for suturing. The finger is not introduced into the rectum at any stage of the operation.

Retropubic prostatectomy is an anatomic approach and a surgical procedure in the true sense of the word, as every step of the operation can be done under direct vision. The prostatic bed and the vesical neck can be carefully examined, both digitally and visually, for possible missed adenomas and in order to control bleeding.

Postoperative Care.—The catheter is attached to a suction apparatus. Suprapubic drainage is removed on the third day. The catheter from the urethra is removed from the seventh to the ninth day. Fluid therapy and remedies to prevent infection, such as penicillin, sulfa drugs, etc., are used. The patients are incontinent for a day after the removal of the catheter, but they soon gain control and leave the hospital from eleven to fifteen days after the operation as a rule.

On the whole, I have been greatly impressed with the lack of complications and the smoother and shorter postoperative convalescence.

Complications.—The following complications were observed:

1. Suprapubic Leakage: Slight leakage of serum from the suprapubic wound was encountered in almost all cases for two or three days after removal of the tube. In 12 cases urine leaked out, but the amount was small and did not inconvenience the patients, nor did it prolong the hospital stay. This leakage also stopped after a few days. In 2 cases only were we obliged to reintroduce the urethral catheter for two or three days in order to stop the suprapubic leakage of urine. There have been no cases of relatively persistent suprapubic fistula.

2. Hemorrhage: In only 1 case was there reappearance of hemorrhage in the urine (on the ninth day). This stopped the next day, and no irrigation of the bladder or any other treatment was necessary.

3. Infections: In no case did we meet with any serious infection of the genitourinary tract after the operation. In fact even the patients with preoperative ascending infection of the kidneys gave us no anxiety after the operation.

4. Femoral Thrombosis: This was met with in 1 case. For this patient no preoperative drainage was used. Blood was transfused at the time of the operation through a cannula in the leg, which was retained in position three days for postoperative fluid therapy. Thrombosis of the femoral vein developed on the same side. How far the operation or the cannula was responsible for this I am not in a position to state.

5. Myocardial Disease: The 2 deaths in this series were probably due to this cause.

The first case was that of a stout elderly man who was admitted for acute retention. After the usual preoperative care, he was operated on. During the operation, even when he had not lost an unusual quantity of blood, his pulse rate had become elevated. He was given a blood transfusion during the operation. After the operation the pulse rate had gone still higher. We felt that it was probably due to hemorrhage either within the bladder or in the cave of Retzius. An exploratory operation was performed the same evening. To my great surprise, there was no bleeding, nor were any clots present in the cave of Retzius. The prostatic cavity contained blood-stained pieces of gelfoam. Except for a small clot, nothing abnormal was present in the bladder. The pulse went higher, and the patient died the same night. Was this a case of anuria developing so soon after the operation, or was the acute trouble precipitated by myocardial failure? I feel certain that he did not die of hemorrhage.

The second case was that of an elderly, thin patient, admitted for acute retention and drowsiness. After the urethral drainage and fluid therapy he gradually improved. Two weeks later he had severe hematuria, for which suprapubic drainage was instituted. While we were trying to improve the general condition of the patient, he had a severe hemorrhage from the rectum. No internal hemorrhoids were responsible for this. Soon afterward there developed subcutaneous hemorrhage. The blood was examined; the platelet count, the bleeding and coagulation time, etc., were normal. A few more transfusions brought him round. After two months, when his general condition has improved, we decided to remove the prostate. The patient insisted that the suprapubic tube also be removed. At operation, with general anesthesia, the pulse rate began to rise even without much loss of blood. The patient did not regain consciousness after the operation and died the same evening.

Other complications — persistent urinary incontiuence, retention, pulmonary embolism, osticitis publes, etc., were not met with in this short personal series of 45 cases.

A postoperative stay of more than fifteen days in the hospital after the operation is seen in the general hospitals alone. This is not due to any operative complications but to other circumstances (poor home surroundings, lack of facilities for proper nutrition, home nursing care, etc.

COMMENT

Taking into consideration the varying pathologic conditions responsible for obstruction in the region of the prostate, although there are definite indications to use any one of the four procedures as an operation of choice, the surgeon will naturally choose, in the majority of his cases, the procedure which in his hands has produced the most satisfactory functional results with the least risk and the shortest and smoothest convalescence. He should not try to fit the patient to the operation, but should perform the operation best suited to the condition of the patient. Millins' procedure, although the latest in prostatic surgery, is not the last word. It can still be improved upon. It is not an easy operation, but a trained surgeon can master it without difficulty. I would not advise a young surgeon to resort to this method in the early part of his career.

The medium bar and the middle lobe enlargement are best treated by the transurethral method. The malignant prostate probably may be tackled best by the perineal route. Comparing the suprapubic and the retropubic methods I feel certain that the latter is superior in every way. The operative shock is minimal, and the postoperative convalescence is decidedly shorter and smoother. As one must work in the deep cavity at the bottom of the cave of Retzius, the time taken for the actual operation is longer, but from the patient's point of view, which is the prime consideration, the operation is ideal. We have records of 2 patients aged 83 and 85, with systolic blood pressure of 190 and 210 mm. of mercury, who left the hospital on the eleventh and the fourteenth day respectively after the operation, with full control of micturition and the suprapubic wound soundly healed. My associates and I have removed the fibrous prostate and the calculous prostate under direct vision by this route with complete satisfaction. I do not hesitate to suggest that any nonmalignant prostatic obstruction can be removed by this excellent procedure. Indeed, it is the operation of choice for a large adenomatous gland. If Millins' procedure is not the best possible, it is certainly better than the others available.

SUMMARY AND CONCLUSIONS

1. Retropubic operation is a definite advance in prostatic surgery.
2. The procedure is anatomically sound, as no important organs are disturbed and the gland is reached directly.
3. Each step of the operation can be done under direct vision, and hemorrhage can be controlled efficiently.
4. Postoperative complications are negligible, and the period of convalescence is smoother.
5. The hospital stay is greatly reduced.

RÉSUMÉ ET CONCLUSIONS

1. La chirurgie rétropubienne de la prostate est un avancement scientifique.
2. C'est un procéde plus anatomique pour atteindre la prostate et l'enlever sans être obligé de blesser des organes voisins.
3. Chaque manipulation se fait de visu; l'hémorragie est facilement contrôlée.

4. Les complications post-opératoires sont insignifiantes; les convalescences plus agréables.

5. Le séfour hospitaliser est très raccourci.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

1. Die retropubische Operation stellt einen unbestreitbaren Fortschritt in der Chirurgie der Prostata dar.

2. Anatomisch ist die Operation wohlbegruendet, weil keine wichtigen Organe gestoert werden und die Druese direkt angegangen werden kann.

3. Jeder einzelne Schritt der Operation kann unter Leitung des Auges ausgefuehrt werden, und Blutungen koennen wirksam kontrolliert werden.

4. Postoperative Komplikationen spielen keine Rolle und die Rekonvaleszenz verlaeuft glatt.

5. Der Aufenthalt im Krankenhaus kann erheblich abgekuerzt werden.

RESUMEN Y CONCLUSIONES

1. La operación retropúbica es un adelanto definitivo en la cirugía prostática.

2. Es anatómicamente perfecta, dado que la glándula se alcanza directamente sin trastorno de ningún órgano importante.

3. Cada tiempo de la operación puede hacerse a la vista y la hemorragia puede controlarse directamente.

4. Las complicaciones postoperatorias carecen de importancia y la convalescencia tiene lugar sin incidentes.

5. La estancia en el hospital se acorta grandemente.

RIASSUNTO E CONCLUSIONI

1. L'operazione retropubica e' definitivamente un progresso nella chirurgia prostatica.

2. Anatomicamente e' la vera via di accesso perche' organi importanti non sono disturbati e la ghiandola e' raggiunta direttamente.

3. Ciascun tempo operatorio e' fatto sotto controllo visivo e l'emoraggia e' controllata perfettamente.

4. Le complicazioni post-operatorie sono trascurabili e la convalescenza piana.

5. L'ospitalizzazione e' di gran lunga ridotta.

SUMÁRIO E CONCLUSÕES

1. A operação retropúbica é um definido avanço na cirurgia prostática.

2. E' anatomicamente perferival porque orgãos importantes não são injuríados e a glandula é alcançada diretamente.

3. Todo tempo operatório póde ser feito sob visão e a hemorragia póde ser controlada eficientemente.

4. As compliçações pos-operatórias são menores e o perio do de convalescença é mais suave.

5. A estadia no hospital é grandemente reduzida.

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Postgraduate Courses

are in preparation and will shortly be made available by the International College of Surgeons. Full particulars will appear in the November issue of the JOURNAL.

Total Versus Subtotal Abdominal Hysterectomy

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THE purpose of this paper is to make a sincere plea for the exercise of greater conservatism with regard to the surgical procedure involved in abdominal hysterectomy. I hope to present sufficient evidence against the growing tendency to perform total hysterectomy as a routine measure, in the removal of benign tumors of the uterus. This voguish predisposition toward radical operation precludes proper consideration of each case on its own merits, and can blind the surgeon to the advantages of the more moderate procedure.

Personally, I see no justification for subjecting a patient to total hysterectomy unless there is adequate evidence of operable malignant tumor, persistent cervicitis that does not respond to treatment, or a cervix that shows polypoid growth.

Most surgeons will wholeheartedly agree that the pitfalls encountered in total hysterectomy are greater than those in the subtotal procedure. Let us consider the complication of cystitis due to injury of the bladder. Who has not seen this postoperative complication with its lifetime of sequential encumbrances, preventing the patient from resuming a normal life? Total hysterectomies performed on patients with cervicitis are inclined to be complicated by infection in the urinary tract, as it is well known that the lymphatics which drain the cervix extend up to the base of the bladder, and also upward along the ureters to the pelvis of the kidney. Any disturbance of the natural barriers to infection may contribute to most undesirable postoperative complications. Regardless of the surgeon's technical brilliance, the very nature of the total hysterectomy demands wide dissection and disturbance of the circulation of the vesical wall. With such extensive stripping maneuvers, performed in order to expose the parts to be excised, this wall is very apt to become injured. Thus, any normal physiologic position or functional expansion of the urinary bladder cannot be maintained. I believe in preserving the cervix and interfering as little as possible with the bladder wall. I grant that some of the same hazards are present in the subtotal hysterectomy, but surely to a much slighter degree.

Cystitis (with urinary residue, which increases hospitalization from one to two weeks, and does not end with discharge from the hospital), plus frequency and painful urination, is certainly no boon to a patient with a normal cervix; and for a surgeon to undertake such an unwarranted procedure merely on the theory of "cancer potentiality" is, in my opinion, highly unjust to the patient.

There are other postoperative complications which deserve discussion. The frequency of vaginal prolapse in patients who have undergone total hysterectomy is most significant. A serious contemplation of this disability on its own merits makes me apprehensive and dubious as to the wisdom of any wholesale adoption of total hysterectomy procedures. Medical literature is prolific of arguments supporting radical surgery in general. The writers seem inclined to subordinate all consequences, no matter how serious or how disabling, to the importance of "cancer potentiality."

In operations on parous women it is not always possible to fix the amputated vagina adequately and securely, so as to prevent complete prolapse of the vagina as a hernial sac through the vaginal orifice. Adequate fixation of the vaginal stump requires sufficient support by broad

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and round ligaments, which are often shortened by surgical section and therefore difficult to suture, securely and without undue tension, to an already shortened vaginal stump. Obviously, a retained cervical stump is a normal anatomic structure, to which adequate fixation of the broad and round ligaments can be obtained and maintained for proper functional support of the pelvic viscera. This surgical dilemma and its dire consequences should have some influence on the surgeon's decision.

The noticeable increase in the incidence of vesicovaginal fistulas is directly attributable, according to the authors of the voluminous current literature on the subject, to the increased popularity of total hysterectomy. Interference with the nerve and blood supply of the bladder during operation; clamping or ligating of a piece of the bladder wall in the enclosure of the vaginal vault, (which results in sloughing) and vesical trauma, are a few of the liabilities incurred in "rugged" surgery.

Parametrial infections and infections of the vaginal wall are also deserving of discussion in our appraisal of complications encountered in total hysterectomy. In the presence of fibroids with edema and induration about the ovarian ligament and broad ligament, anything but a supravaginal pursuit would indeed be a mistake. To break the natural barriers to infection in the lower cervical region, where the infection may be of long standing and of the streptococcic type, would undoubtedly precipitate spread of this infection to the broad ligaments and the lymph channels and nodes along the iliac vessels, as well as to the regional lymph nodes of the groin. This manipulation, together with the opening of the infected vaginal cavity, combine to produce prolonged induration of the vaginal wall and the pelvic floor. When this situation develops, it can become chronic and may last for years, with subsequent perineal pain and thickening of the vaginal wall, which is conducive to sexual inactivity.

When the presence of malignant lesions of the cervix, uterus and adnexae is indisputable, then and then only is the surgeon relieved of making any choice between the two operations. The complications herein described are then of minimal importance and should be brushed aside for the only acceptable procedure, total hysterectomy. It should include the fallopian tubes and ovaries and the upper portion of the vaginal canal, which should be thoroughly cleaned. The cervical canal should be sutured at the external os to prevent the escape of malignant cells via the canal, with subsequent implantation of the disease elsewhere. Of course, the patient should have been given preoperative high voltage roentgen therapy. The good results of combining roentgen and radium therapy with operation in the removal of carcinoma of the uterus, cervix or cervical stump have been self-evident. Apparently the healing and shrinking effect of irradiation reduces infection and the added risk of peritonitis. Moreover, the immediate application of therapy has proved most advantageous in cases in which the presence of malignant change was confirmed by the pathologist after the operation.

The use of the Papanicalaou smear should be routine when malignant disease is suspected, as it facilitates early detection, but there is no diagnostic guarantee as conclusive as biopsy or curettage. Wide conization of the cervix is best performed with a scalpel, so as to avoid desiccation of the tissue of the specimen removed.

I am not overlooking the incidence of cancer in the retained stump of the cervix. This is not of frequent occurrence; in fact, it is surprising to note how few cancers of this type occur, in comparison with the great number of cancers of the cervix which come to attention daily. It is generally assumed that there is an incidence of about 1 per cent. It is impossible to devise any authoritative or accurate follow-up system for determining the number of stump cancers that occur after subtotal hysterectomy. A possible 1 per cent seems to me almost negligible in the face of the many hazards I have mentioned. On the slim basis of "cancer potentiality," should one automatically condemn all patients who need hysterectomy to the ravages of the total procedure? It is entirely possible that many of these cancers were erroneously diagnosed to begin with, and that the tumor or adenocarcinoma of the uterine body was present at the original operation. What is more, we all know that evidence of cancer in the retained cervices of hysterectomized women is considerably less frequent than in those who have had no operation at all. This may be due to the fact that there is a tendency of the retained cervix to atrophy and clear up after supravaginal hysterectomy, with subsequent disappearance of the formerly persistent chronic cervicitis. Indeed, the surgeon must be conscientious in his postoperative vigilance and impress the patient with the necessity of examinations at six-month intervals, so as to insure early detection of any malignant change arising after the supravaginal hysterectomy. It is no disgrace to have to remove a retained cervical stump because of its residual inflammatory character at some future date.

TABLE 1.—*Analysis of 551 Successive Abdominal Hysterectomies at St. Joseph's Hospital, Marshfield, Wisconsin, 1940-1948*

	No. of Cases
Subtotal hysterectomies	450
Total hysterectomies	101
Carcinomas of cervical stump occurring in 450 subtotally hysterectomized patients	4

An analysis of some 551 successive abdominal hysterectomies from the records of St. Joseph's Hospital of Marshfield, Wisconsin, has been made. The records were compiled from 1940 to 1948 inclusive. Of these, 450 were subtotal; 101 were total.

Out of the 450 patients subtotally hysterectomized, cancer of the cervical stump has been discovered in 4. In 1 the growth appeared two years after operation and was treated with roentgen and radium therapy. The patient died six years later. In 1 case the diagnosis was made three years after operation; roentgen and radium therapy were given, and after two years the patient is living and well. The 2 remaining carcinomas of the cervical stump were diagnosed three and four years after operation. High voltage roentgen and radium therapy were administered and the cervical stump excised. Both patients are living and well, and there is reason to believe that they are cured. The percentage of carcinoma of the cervical stump in this series of cases is in the neighborhood of 0.8 per cent.

TABLE 2.—*Analysis of 450 Subtotal Hysterectomies at St. Joseph's Hospital, Marshfield, Wisconsin,* 1940-1948

Postoperative Diagnosis	Number	Percentage
Leiomyoma of uterus	261	58.
Fibrosis of uterus	53	11.6
Prolapse, leiomyoma and ovarian Cyst	30	6.65
Endometriosis	24	5.32
Ovarian cyst	36	8.
Salpingitis	13	3.
Functional bleeding	14	3.12
Adhesions	10	2.32
Ectopic pregnancy	6	1.32
Placenta praevia with uterine hemorrhage	3	0.67
Total	450	100

Of the 450 subtotally hysterectomized women, 58 per cent showed leiomyomas and 10 per cent fibrosis of the uterus. The remaining 32 per cent showed evidence of endometriosis, ovarian cysts, salpingitis and functional bleeding.

TABLE 3.—*Analysis of* 101 *Total Hysterectomies at St. Joseph's Hospital, Marshfield, Wisconsin,* 1940-1948

	Number	Percentage
Leiomyoma with cervicitis	32	31.68
Fibrosis of uterus with chronic cervicitis	23	22.7
Leiomyoma with cervical polyp	6	5.9
Endometriosis, fibroid and chronic cervicitis	4	3.7
Leiomyoma, ovarian cyst and chronic cervicitis	5	4.9
Carcinoma of fundus of uterus	26)	30.6
Carcinoma of uterus with fibroids	2)	
Carcinoma of cervix	3)	

In the 101 cases of total hysterectomy leiomyoma was the predominating feature,

TABLE 4.—*Analysis of Complications in 551 Hysterectomized Patients*

	Total Hysterectomy		Subtotal Hysterectomy	
	No.	%	No.	%
Cystitis, some with retention	39	38.64	96	20.13
Residual urinary retention at discharge	11	10.98	6	1.55
Average stay in hospital (days)	17		14	
Shock—actual and impending	5	4.97	22	5.22
Chronic induration of parametrium and vaginal wall	4	3.96	0	0
Vaginal bleeding	1	0.99	3	0.64
Vesicovaginal fistula	0	0	0	0
Rectovaginal fistula	0	0	0	0
Kinked, cut or tied ureter	0	0	0	0
Morbidity: temperature through 6th day	Increased		Less	
Mortality	0	0	0	0

occurring in 31 per cent of the cases. There was a 30 per cent incidence of carcinoma of the cervix and fundus and a 22 per cent incidence of fibroids of the uterus with chronic cervicitis. The remaining 17 per cent showed evidence of leiomyoma, ovarian cyst, endometriosis with fibroids and chronic cervicitis.

In analyzing the complications of hysterectomized patients, one observes from Table 4 that cystitis is the most frequent postoperative disorder. Residual urinary retention runs a close second. In the total hysterectomy series, the residual urine complication exceeded its incidence in subtotal hysterectomy by 9 per cent, and the stay in the hospital was three days longer. Induration of the parametrium and vaginal wall, distressing to the patient, has never been found in our series of subtotal hysterectomies.

We have been so fortunate as to have had not one single case of vesicovaginal fistula, rectovaginal fistula, or kinked, cut or tied ureter, which we certainly would have had if we had resorted to total hysterectomy on the slightest provocation. We are equally fortunate to have a mortality rate of zero. This we attribute to our conservative type of surgery and to the splendid cooperation of the medical department in preparing these patients for surgical intervention.

SUMMARY

All comparative analyses of total and subtotal hysterectomy which I have found in the literature are disconcerting, the statistics being hopelessly confused and obviously not telling the whole story. If one were to accept the comparative morbidity and mortality rates reported, one could only conclude that total hysterectomy is the better procedure. However, on a more exhaustive investigation it becomes evident that the figures do not take into account the fact that many subtotal hysterectomies are performed on the assumption that the patient could not tolerate the rigors of the total operation. That is to say, patients with serious pelvic inflammatory conditions and necrotic tumors with a subsequent high mortality potentiality are much more apt to be treated conservatively via the supravaginal method, thereby confusing any bases of comparison. Actually the mortality rates show very little difference between the two types of operation.

Total hysterectomy has gained a not altogether justifiable popularity, so that many a perfectly normal cervix has come under the knife needlessly, only to multiply the frequency of vesical trauma, kinked, cut or tied ureters, vaginal prolapse, vesicovaginal or rectovaginal fistula, infections of the parametrium and the vaginal wall and many other complications. In the hands of the expert, the patient may be spared some of these complications, but in my opinion total hysterectomy performed as a routine measure is both presumptuous and ill-advised.

RÉSUMÉ

Toutes les compilations que je trouve dans la littérature comparant les mérites respectifs de l'hystérectomie totale et l'hystérectomie sub-totale donnent des statistiques déconcertantes et sont un exposé confus et incomplet. Si on acceptait leurs taux comparatifs de morbidité et de mortalité, on serait mené à la seule conclusion que l'hystérectomie totale est la meilleure technique. Mais si on regarde plus loin, il est évident que ces chiffres ne prennent pas en considération le fait que plusieurs subtotales sont pratiqueés en assumant que les patientes ne pourraient tolérer une hystérectomie totale. C'est-à-dire que les patientes avec une sérieurs inflammation pelvienne ou une tumeur nécrotique, et dont le taux de mortalité possible est très élevé, méritent le traitement plus conservateur qu'est la subtotale. Ceci rend confuse toute comparaison. En fait, actuellement, le taux de mortalité ne diffère pas beaucoup entre les deux types d'opération.

L'hystérectomie totale s'est acquis une popularité non toujours justifiable parce que bien des cols utérins parfaitement sains ont passé sous le couteau, parce que l'on rencontre beaucoup plus de vessies traumatisées, d'uretères coudés, coupés ou ligaturés, de prolapsus vaginaux, de fistules vésico- ou recto-vaginales, d'infection du paramètre et des parois vaginales et beaucoup plus d'autres complications. On ne rencontrera pas toutes ces complications si le chirurgien est un expert; mais je crois que l'hystérectomie totale pratiquée comme une routine est excessive et mal indiquée.

ZUSAMMENFASSUNG

Alle vergleichenden Analysen von totalen und subtotalen Gebaermutterresektionen, die ich in der Literatur gefunden habe, sind irrefuehrend. Die Statistiken befinden sich in einem Zustand hoffnungsloser Verwirrung und ergeben offenbar nur eine unvollstaendige Darstellung der Verhaeltnisse. Wuerde man die in den Berichten vorliegenden Vergleichszahlen der Morbiditaet und der Sterblichkeit als Tatsachen hinnehmen, so koennte man nur zu dem Schluss kommen, dass die totale Gebaermutterresektion das bessere Verfahren waere. Eine sorgfaeltigere Untersuchung jedoch ergibt deutlich, dass diese Zahlen die Tatsache ausser acht lassen, dass viele subtotale Gebaermutterresektionen ausgefuehrt werden, weil man annimmt, dass die Kranke den Anstrengungen einer Totaloperation nicht gewachsen sei. Das bedeutet, dass Kranke mit schweren Beckenentzuendungen und nekrotischen Geschwuelsten, von denen eine hohe Mortalitaet erwartet werden muss, viel eher konservativ mit der supravaginalen Methode behandelt werden. Damit wird jede Basis fuer einen Vergleich zerstoert. In der Tat besteht zwischen den beiden Formen der Operation nur ein sehr geringer Unterschied in der Sterblichkeitsquote.

Die totale Gebaermutterresektion erfreut sich einer durchaus nicht zu rechtfertigenden Beliebtheit. Daher kommt es, dass in vielen Faellen ein voellig normaler Gebaermutterhals unnoetigerweise geopfert wird, und das Ergebnis ist ein Anwachsen des Auftretens von Blasenschaedigungen, Knickungen, Durchschneidungen oder Abbindungen der Harnleiter, von Scheidenvorfaellen, Blasenscheidenfisteln, Mastdarmscheidenfisteln, Infektionen des Parametriums und der Scheidenwand und von vielen anderen Komplikationen. Die Hand des Erfahrenen wird der Kranken manche dieser Komplikationen ersparen. Meiner Meinung nach aber ist es uebertrieben und unratsam, die totale Gebaermutterresektion als routinemaessiges Verfahren anzuwenden.

RESUMEN

Se consideran desconcertantes todos los análisis comparativos de histerectomía total y subtotal encontrados en la literatura, siendo las estadísticas desesperadamente confusas y sin mencionar verdaderamente

la historia completa. Si se aceptan los índices comparativos de morbilidad y mortalidad dados a conocer, podría concluirse solamente que la histerectomía total es el mejor procedimiento. Sin embargo, una *investigación más exhausta proporciona* la evidencia de que en las cifras no se toma en cuenta el hecho, de que muchas histerectomías subtotales se efectúan en virtud de que la paciente no resistiría la operación radical. Pacientes con serios estados inflamatorios pélvicos y tumores necróticos, con un alto potencial de mortalidad consiguiente, son más adecuadas de tratarse conservadoramente con el método supravaginal, de donde confusión en cualquiera base de comparación. Actualmente, los índices de mortalidad muestran muy poca diferencia entre los dos tipos de operación.

La histerectomía total ha ganado una popularidad no enteramente justificable, *ye que muchos cuellos perfectamente normales* han sido extirpados sin necesidad, multiplicando solamente la frecuencia del trauma vesical, lesiones ureterales, pro*lapso vaginal, fístula vesicovaginal a rec*tovaginal, infecciones del parametrio y la paredo vaginal y muchas otras complica*ciones. En manos del* experto pueden evitarse algunas de estas complicaciones, pero el autor opina que la histerectomía total en forma rutinaria es excesiva y está mal indicada.

RIASSUNTO

Tutti gli studi comparativi intorno all'isterectomia totale e subtotale che io ho trovato in letteratura sono sconcertanti essendo le statistiche irremediabilmente confuse e di conseguenza non veritiere. Se uno dovesse accettare le cifre comparate di morbidita' e mortalita', dovrebbe *concludere che l'isterectomia totale é il* miglior procedimento. Ma ad una investigazione accurata emerge che le cifre non tengono in conto il fatto che molte isterectomie subtotali sono eseguite in considerazione del fatto che la paziente non potrebbe sottostare la severita' di una totale. Cio' significa che le pazienti con serie condizioni infiammatorie pelviche e tumori necrotici e conseguentemente con una alta mortalita' operatoria in potenza, sono piu' atti ad essere trattati conservativamente con una isterectomia sopravaginale, confondendo in tal modo le basi di ogni studio comparativo. Attualmente i tassi di mortalita' mostrano una piccola differenza fra i due tipi di operazione. L'isterectomia totale ha guadagnato una non giustificata popolarita' cosicché un collo perfettamente normale é innecessariamente escisso, solamente per moltiplicare la frequenza del trauma vescicale, angolature, recisioni o legature degli ureteri, prolapsi vaginali, fistole vescico o retto-vaginali, infezioni del parametrio e delle pareti vaginali e molte altre complicazioni.

Nelle mani di esperti, il paziente puo' essere risparmiato da queste complicazioni, *ma nella mia opinione l'isterectomia totale* praticata come una misura di routine é eccessiva e mal suggerita.

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Editorial

College Activities

A REPORT OF PROGRESS

In the January issue of the *Journal* appeared an editorial beginning "The second half of the twentieth century has opened upon a period of great promise in the history of the International College of Surgeons. Never before has there been so strong and all-pervading an interest in the fulfillment of College ideals and the world-wide extension of College membership and facilities."

If these statements called for any more substantial evidence than was already apparent even to casual observation, the recent Assembly in Chicago of the United States and Canadian Chapters has supplied it. The intrinsic strength inherent in the principles on which the College is founded, the soundness and integrity of its academic and ethical standards, and the high quality of its membership have been reaffirmed in every particular. Resoundingly acclaimed by surgeons of distinction all over the world, honored by civil and governmental authorities everywhere, hailed as a supremely valuable exponent of international good will and impartial dissemination of scientific knowledge, this organization now stands on ground beyond the reach of the devil's advocate. It has nothing to conceal and nothing to defend, and is therefore free to devote all its energies to the work for which it was conceived and created.

The Chicago Assembly brought forth emphatic approval of the policies that govern this work, as well as obvious confirmation of their soundness. Surgeons of established ability, denied other organizational outlets by this or that technicality, have always an opportunity to prove their merit to the International College of Surgeons and be welcomed into the privileges and responsibilities of membership; the sole disqualification is failure to meet the admittedly high standards of the College. In 1946, by a unanimous vote of the House of Delegates, the Surgical Qualification Board was established to evaluate the credentials of all candidates for Certified Fellowship. The purpose of this Board is "to encourage both men and women to make themselves exceptionally proficient in the art and science of surgery and its allied specialties." Certification for fellowship is based on "impartial determination of the personal qualifications, professional ability, and mastery of the art and science of surgery . . . to maintain the highest standards of surgical skill." There is therefore no question of age, sex, race, nationality, religious affiliation or political influence; whether admission to fellowship is accorded by examination or by merit otherwise established, merit alone is the College criterion. Admission by merit is an unusual if not a unique advantage offered by the International College of Surgeons, which, almost alone among organized professional groups of any kind, sets due and proper value upon wisdom gained by experience. Many fine surgeons, highly skilled as a result of years of devoted, conscientious practice—men who have rightly placed the welfare of their patients above their personal advancement and aggrandizement—are eligible for certification by merit. They must prove title, of course, and by no small measuring-rule; in other words, they must be equal in ability and character to those who enter by examination. It goes without saying that many of these men are not only equal but outstanding, and the College is honored by their participation. The importance of actual operative experience is

Main entrance to the Home of the International College of Surgeons, 1516 Lake Shore Drive, Chicago. The College Home has lately been enlarged and its future facilities expanded by the purchase of a second fine mansion at 1524 Lake Shore Drive.

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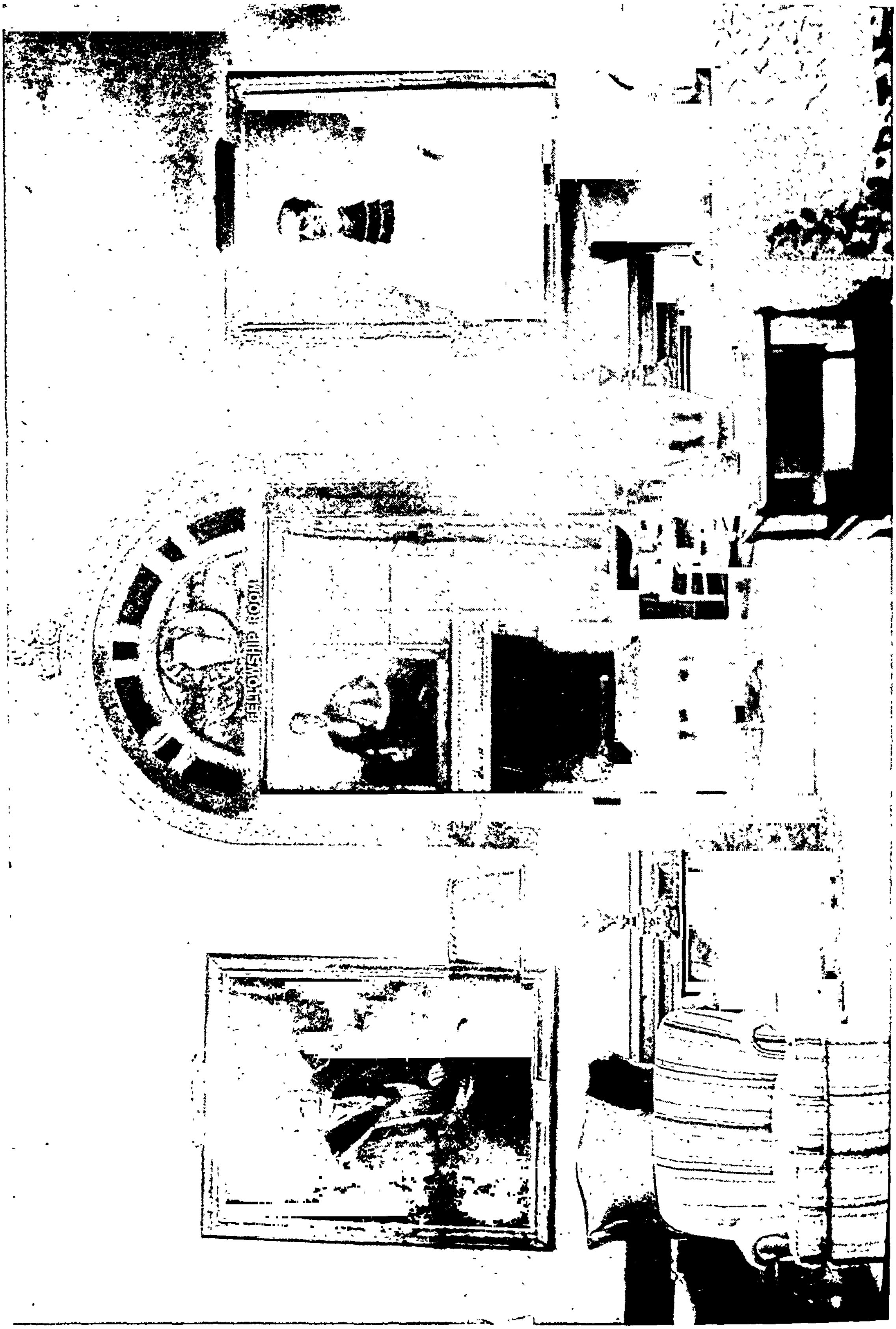
Library of the College Home, with part of the class of 1951 taking written examinations for admission to Fellowship in the College.

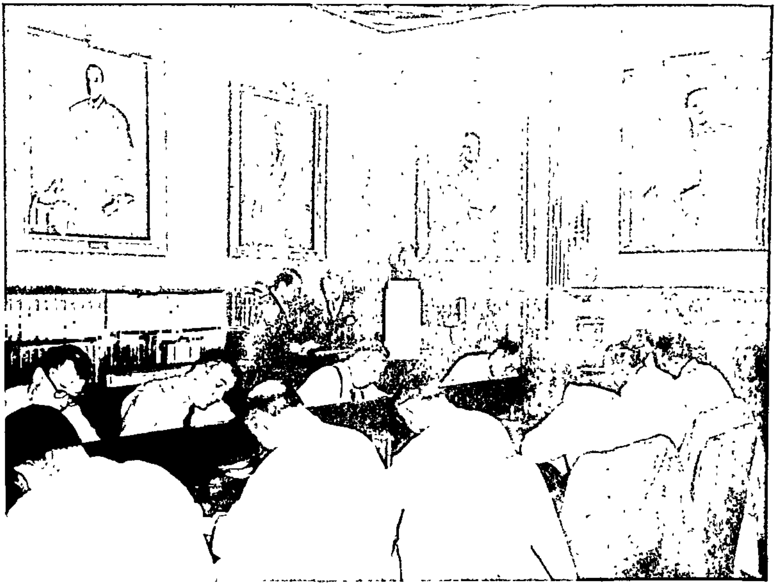
in some danger of sinking out of sight in an overspecialized, superacademic scientific regime. The International College of Surgeons, convinced that its disappearance can have none but evil results, has constituted itself a defender of first principles and the patient's well-being.

All candidates for certification in the United States Chapter must be citizens of the United States and members of the American Medical Association and of the state and county medical societies of their respective localities. Their moral and ethical records must bear the closest possible scrutiny. Each must be a graduate of a medical school recognized by the Council of Medical Education and Hospitals of the American Medical Association.

Candidates for certification by examination must have completed an internship of not less than a year in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association and must give evidence of surgical training of not less than three years in addition. This training may be acquired in any of several ways (*Journal*, January 1951). Each candidate must submit a list of his scientific publications, accompanied by reprints if possible. He must also submit a complete record of all surgical procedures performed by him for at least one year prior to his application for Certified Fellowship. Finally, he must show that his practice has been limited to surgery or a surgical specialty for at least three years.



Entrance to Fellowship Room in the College Home.



Library of the College Home, with part of the class of 1951 taking written examinations for admission to Fellowship in the College.

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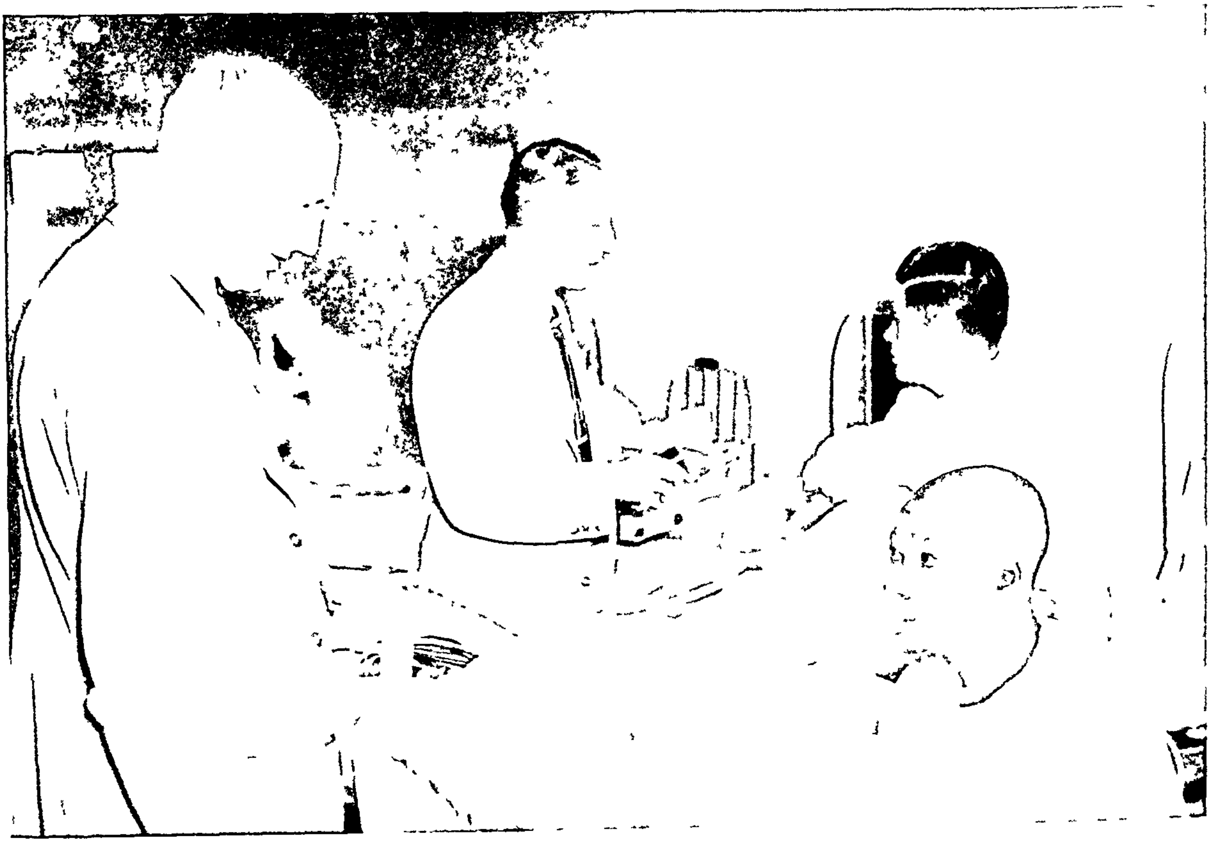
Candidates for certification by merit, in addition to meeting the requirements aforementioned as applying to all applicants, are required to have practiced surgery as a specialty, with distinction, for ten or more years, and to have demonstrated beyond question their skill and fitness as surgeons. Any certificate issued by the Board is subject to revocation by the unanimous action of the Board whenever the Board shall determine that a candidate is guilty of misrepresentation of facts on his application, or has become disqualified since its receipt through violation of the code of ethics of the American Medical Association.

Evaluation of the candidate's credentials is among the responsibilities of the Executive Council, the Qualification Board and the Examining Committee. It is conducted systematically and on a strictly impartial basis, on principles carefully worked out and established in advance. The general high quality, both personal and professional, of College membership today, bears witness to the scrupulous attention to all relevant details that characterizes the work of these College officials.

Regents: The Board of Regents is listed on Page 498, followed by photographs of its members. These well known surgeons give gladly and freely of their time and talents to the task of maintaining the standards and increasing the effectiveness of College activities. The energy and efficiency of their efforts and those of their equally distinguished predecessors in office is in large part responsible for the growth of the International College and its worldwide influence toward higher professional standards. By study, by frequent conference and by perpetual alertness to the fluctuating demands of what is probably the most demanding profession in the



Oral clinical examination conducted at Cook County Hospital, Chicago.

Council meeting to evaluate credentials of candidates for Fellowship.

world, they integrate the many-faceted program of endeavor into a symmetric whole.

Women's Auxiliary: The Women's Auxiliary sustains a prominent role in the activities of the United States Chapter and is an important contributor to College amenities. The Sixteenth Annual Assembly was marked, as always, by the attendance and participation of these devoted and gracious partners in College endeavor.

This section of the *Journal* is devoted to an exposition, both factual and pictorial, of the College and its activities, including the recent Assembly. The illustrations have been selected to take the reader, as it were, on a conducted tour of the College, from examinations and organizational conferences in the beautiful and dignified College Home on Lake Shore Drive in Chicago through a typical annual Assembly which, although officially an Assembly of the United States and Canadian Chapters, was attended and participated in by distinguished surgeons from many other countries.

All in all, the International College of Surgeons seems in good health, good heart, good form and increasing prosperity. The individual presentations on the Assembly Program were memorable for their conciseness, completeness, timeliness and applicability to modern surgical problems. *Most of them of course, will appear as* original articles in this *Jo*

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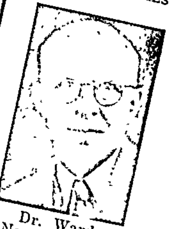
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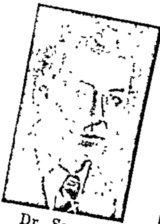
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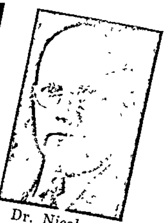
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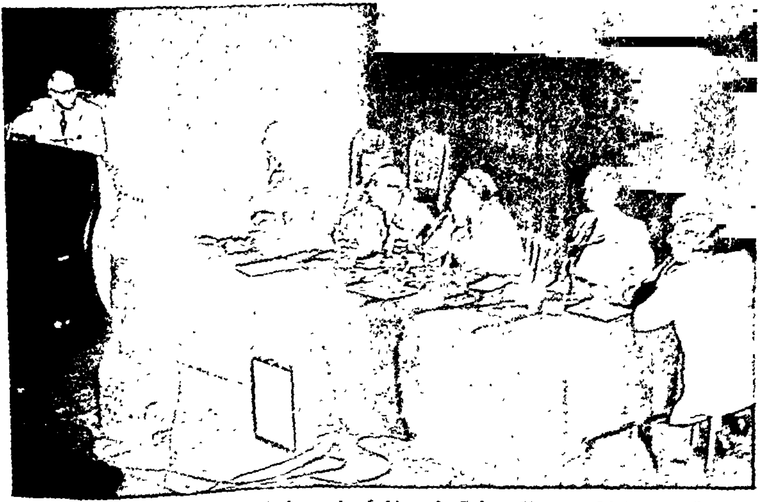
Organization luncheon of Women's Auxiliary, United States Chapter, International College of Surgeons.

Women's Auxiliary tea at the College Home.

The Assembly

THE Sixteenth Annual Assembly of the United States Chapter, with the Canadian Chapter an equal participant, was held at the Palmer House in Chicago on September 10 through 13, 1951, with a registration of over four thousand. A scientific program of remarkable diversity and excellence was presented, including special features offered by the Sections of Urology, Obstetrics and Gynecology, Ophthalmology and Otorhinolaryngology, Orthopedics, and Occupational and Plastic Surgery. An outstanding scientific motion picture program was arranged by a special committee. A new feature of importance was the Premiere of the Film Forum. Scientific exhibits were offered by another special committee headed by Dr. William Carpenter MacCarty Sr., F.I.C.S. (Hon.), of the Mayo Clinic and including Dr. Claude J. Hunt, F.A.C.S., F.I.C.S., of Kansas City, Missouri, and Mr. Harold R. Heberlein of the Jackson Clinic, Madison, Wisconsin, who served as business director. The technical exhibits, under the direction of Mr. William J. Burns of Lansing, Michigan, included contributions from many major pharmaceutical firms, manufacturers of surgical instruments and equipment, and medical and surgical book publishers.

Premiere of Film Forum: This initial session was held in the Grand Ballroom of the Palmer House, which was packed to capacity. Dr. Louis A. Buie, F.I.C.S. (Hon.), of the Mayo Clinic, served as moderator. The speakers were Dr. Harry E. Bacon, F.A.C.S., F.I.C.S., of Temple Uni-



Panel discussion of acute intestinal obstruction held at the Palmer House on Wednesday, Sept. 12, 1951. Participants (left to right): Dr. Herbert Acuff, F.A.C.S., F.I.C.S., Dr. Arnold S. Jackson, F.A.C.S., F.I.C.S., Dr. Thomas Noble Jr., F.I.C.S., Dr. Philip Thorek, F.A.C.S., F.I.C.S., Dr. Guy Pontius, F.A.C.S., Dr. Franklin L. [illegible], F.A.C.S., F.I.C.S., Dr. George Curtis, F.A.C.S., F.I.C.S., and Dr. Lloyd [illegible], F.I.C.S.

versity, Philadelphia; Dr. Lester R. Dragstedt, M.S., Ph.D., F.A.C.S., of the University of Chicago; Dr. Samuel F. Marshall, F.A.C.S., of the Lahey Clinic, Boston, and Dr. Willis J. Potts, F.A.C.S., of Northwestern University.

Each speaker exhibited and commented upon his film, after which there was a period for questions and discussion. *The Technic of Abdominoperineal Proctosigmoidectomy Without Colostomy and with Preservation of the Sphincter Musculature* was presented by Dr. Bacon; *Supradaiphragmatic Gastric Vagotomy for Peptic Ulcer: The Abdominal Approach,* by Dr. Dragstedt. *Dr.* Marshall's title was *Gastric Resection for Postbulbar Ulcer,* and Dr. Potts spoke on *Surgical Division of Patent Ductus Arteriosus.*

The enthusiasm with which these presentations were received is evidence of the rapidly increasing importance of the film technic to the spread of technical surgical knowledge. We may look forward with confidence to growth and expansion in this field.

Dr. Harry E. Bacon, Temple University, Philadelphia, Film Forum Premiere speaker.

Dr. Louis A. Buie, Mayo Clinic, Moderator, Film Forum Premiere.

Dr. Samuel F. Marshall, Lahey Clinic, Boston Film Forum Premiere speaker.

The Banquet: The Grand Ballroom of the Palmer House was also the scene of the annual banquet, which was held on the evening of Wednesday, September 12. The speaker of the occasion was Mr. A. Lawrence Abel, M.S. (London); F.R.C.S. (England), F.I.C.S. (Hon.), of London, England, who addressed the Assembly on *What Is Happening in Britain—Fact and Fiction.* The complete text of Mr. Abel's stimulating and thought-provoking address will be found on Page — et seq.

Convocation: The always moving and impressive ceremonies of Convocation took place in the Chicago Civic Opera House, with admission of close to a thousand members to the College of Surgeons.

The Palmer House, Chicago.

Dr. Lester R. Dragstedt, University of Chicago, Film Forum Premiere speaker.

Dr. Willis J. Potts, Northwestern University, Chicago, Film Forum Prem er.

New members
Chapters were g
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England, France.
Haiti, Iran, Israel
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F.I.C.S., opened the
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The Convocation was
Henry W. Meyerding,
United States Chapter,
of the College. The sp

Dr. Max Thorek, Founder of the Int
College of Surgeons, speaks at Conv

George E. Armstrong, Major General (M.C.), United States Army, Washington, D.C., F.A.C.S., The Surgeon General, United States Army. Former Theater Surgeon, China-Burma-India; Theater Surgeon, China; Legion of Merit; American Defense Service Medal; Army Commendation Ribbon; Chinese Cloud Banner with Ribbon; Chinese Honorary Nobility Medal; Chinese Legion of Honor and Order of the Crown of Italy (Commandership).

Presented by Dr. William Wayne Babcock, F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania, and Dr. Lyon H. Appleby, F.R.C.S. (Eng.), F.R.C.S. (Can.), F.A.C.S., F.I.C.S., Vancouver, B.C., Canada.

Giuseppe Bendandi, M.D., F.I.C.S., Professor of Surgical Pathology, Clinical Surgery and Traumatology, Postgraduate School, Faculty of Medicine, University of Rome; Secretary Italian and Roman Surgical Societies; Editor-in-Chief of "Chirurgia Thoracica" and Gazzetta Internazionale di Medicina e Chirurgia."

Presented by Dr. Clement L. Martin, F.A.C.S., F.I.C.S., Chicago, Illinois, and Dr. Max Leopold Brody, F.A.C.S., F.I.C.S., Boston, Massachusetts.

William L. Benedict, M.D., F.A.C.S., Rochester, Minnesota; Emeritus Professor of Ophthalmology, Graduate School of Medicine, University of Minnesota, Mayo Foundation; Emeritus Head of the Section on Ophthalmology, Mayo Clinic; Consultant, American Board of Ophthalmology Executive Secretary-Treasurer, American Academy of Ophthalmology and Otolaryngology; First Honorary Life Member, Philippine Ophthalmological and Otolaryngological Society; Vice-President, National Society for the Prevention of Blindness; Secretary General, Seventeenth International Congress of Ophthalmology; Awarded Leslie Dana Medal, 1950.

Presented by Dr. Henry W. Meyerding, F.A.C.S., F.I.C.S., Rochester, Min-

Mr. A. Lawrence Abel (right), London, England.

Major General George E. Armstrong, M.D. (right), Surgeon General, U.S. Army, Washington, D. C.

Prof. Dr. Giuseppe Bendandi (center), Rome, Italy

Dr. William L. Benedict (left), Mayo Clinic, Rochester, Minnesota

nesota and Dr. Paul C. Craig, F.A.C.S., F.I.C.S., Reading, Pennsylvania.

Conrad Berens, M.D., F.A.C.S., New York City; Professor of Clinical Ophthalmology New York University; Attending Surgeon, 1st Ophthalmological Division, French Hospital; Executive Ophthalmic surgeon and Pathologist, New York Eye and Ear Infirmary; Associate Visiting Surgeon, Ophthalmological Service, Bellevue Hospital; Consulting Surgeon in Ophthalmology, Willard Parker Hospital; Consulting Ophthalmologist, New York Infirmary for Women and Children and Woman's Hospital.

Presented by Dr. John G. Bellows, F.A.C.S., F.I.C.S., Chicago, Illinois, and Dr. Oscar B. Nugent, F.A.C.S., F.I.C.S., Chicago, Illinois.

Joel T. Boone, Vice-Admiral (M.C.), United States Navy (Rtd.), Washington, D.C., D.S.C., F.A.C.S., Chief Medical Director, Veterans Administration. Former Physician to Presidents Harding, Coolidge and Hoover; physician to White House, 1929-33; Senior Medical Officer, U. S. Naval Air Station, San Diego, Calif.; Commanding Officer, U. S. Naval Hospital, Seattle; Executive Secretary and Commander, Medical and Hospital Service, Armed Forces; President, Association of Military Surgeons; Army and Navy Legion of Valor, Congressional Medal of Honor, Distinguished Service Cross, 5 citations Silver Star, 3 awards Purple Heart, Victory Medal with 6 Battle Clasps, World War I, Croix de Guerre with 2 palms, Officier, Legion of Honor; Order of Fourragere (France), War Cross (Italy).

Presented by Dr. Moses Behrend, F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania, and Dr. A. H. Whittaker, F.A.C.S., F.I.C.S., Detroit, Michigan.

Francisco Martin Lagos, M.D., Madrid, Spain; Professor of Surgical Pathology, Faculty of Medicine, University of

Madrid; Member, Executive Council of Scientific Investigations, Madrid; Vice-President, Spanish Association of Surgeons; Director and Founder, Revista Española de Cirugía Traumatología y Ortopedi; President, Spanish Chapter, International College of Surgeons.

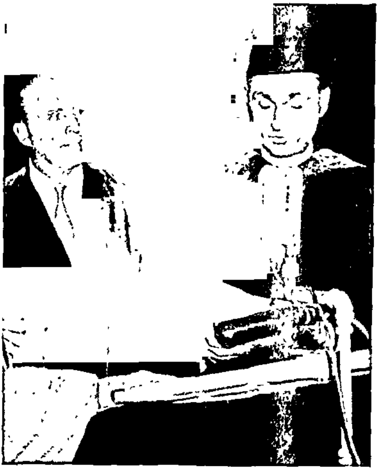
Presented by Prof. Dr. Francisco Grana, F.A.C.S., F.I.C.S. (Hon.), Lima, Peru, and Dr. Harry E. Bacon, F.A.C.S., F.I.C.S., Philadelphia, Pennsylvania.

William Randolph Lovelace, II, M.D., F.A.C.S., F.I.C.S., Albuquerque, N. M.; Chairman, Armed Forces Medical Policy Council, Washington, D. C. Head, Section of Surgery and Member Board of Governors, Lovelace Clinic, Albuquerque, N. M.; Member, Board of Trustees, Lovelace Foundation for Medical Education & Research; Col. Army Air Force, World War II; Distinguished Flying Cross, Air Medal and 3 combat stars; Legion of Merit; Army Commendation Ribbon, Royal Order of the Sword (Sweden); Special Consultant to Air Force; graduate of Harvard, M. S. Surgery; Fellow of Mayo Foundation for Medical Education; formerly Chief of Surgery Section, Mayo Clinic; member Institute of Aeronautical Sciences; co-winner, Collier Trophy Award, 1941.

Presented by Dr. Harry A. Oberhelman, F.A.C.S., F.I.C.S., Chicago, Illinois, and Dr. Max Thorek, F.A.C.S., F.I.C.S., Chicago, Illinois.

H. Lamont Pugh, M.D., Admiral, (M.C.), United States Navy, Washington, D. C.; Surgeon General, United States Navy. Former, Chief of Surgical Service, Naval Hospitals at Pearl Harbor, T. H., San Diego, Calif., Bethesda, Maryland; Assistant Chief, Bureau of Medicine and Surgery; Professional Attendance at Mayo Clinic, Lahey Clinic, Royal Victoria Hospital (Montreal), St. Luke's Medical Center (Tokyo), clinics of Vienna.

Presented by Dr. George M. Curtis, F.A.C.S., F.I.C.S., Columbus, Ohio, and



Dr. Conrad Berens (left), New York City, New York

Dr. John A. Kennedy accepting Honorary Fellowship for Vice-Admiral Joel T. Boone, M.D., U.S.N. (retired), Washington, D. C.

Dr. Francisco Martin Lagos (left), Madrid, Spain

Dr. Grant E. Ward (right), Baltimore, Maryland

Dr. William Randolph Lovelace II (center), Albuquerque, New Mexico

Dr. Horace E. Ayers, F.A.C.S., F.I.C.S., New York, New York.

Leonard Andrew Scheele, M.D., F.A.C.S., Washington, D. C., The Surgeon-Gen-

Admiral H. LaMont Pugh (right), Surgeon General, U.S. Navy, Washington, D. C.

eral, United States Public Health Service; Formerly Field Medical Director, Medical Division, Office of Civilian Defense; Public Health Branch, U. S. Army in Africa, Italy and S.H.E.A.F.; Director National Cancer Institute; Commander, Ohio River Valley Water Sanitation Committee, Head, Department of Army Nutrition Mission to Germany; Legion of Merit; Croix de Guerre, Gran Official Orden Carlos Finlay (Cuba); Commenda nell 'Ordine dei S. S. Maurizo Lazzaro (Italy).

Presented by Dr. Custis Lee Hall, F.A.C.S., F.I.C.S., Washington, D.C., and Dr. Virgil T. DeVault, F.A.C.S., F.I.C.S., Washington, D.C.

Grant E. Ward, M.D., D.Sc., F.A.C.S., Baltimore, Maryland; Associate Professor of Surgery and Oral Surgery, University of Maryland; Associate Professor of Surgery, Johns Hopkins; Surgeon, Johns Hopkins Hospital and Surgeon-in-Charge, Tumor Clinic.

Presented by Dr. Arnold S. Jackson, F.A.C.S., F.I.C.S., Madison, Wisconsin, and Dr. Max Cutler, F.A.C.S., F.I.C.S., Chicago, Illinois.

Dr. Charles W. Mayo, Mayo Clinic, Rochester, Minnesota

Charles W. Mayo, M.D., F.A.C.S., Rochester, Minnesota, Associate Professor of Surgery, Mayo Foundation; Graduate School; Member, Board of Governors, Mayo Clinic; Member, Board of Trustees, Carleton College; Colonel M.C., A.U.S.; Order of the Crown of Italy, 1939.

Presented by Dr. Arnold S. Jackson, F.A.C.S., F.I.C.S., Madison, Wisconsin, and Dr. Henry W. Meyerding, F.A.C.S., F.I.C.S., Rochester, Minnesota.

Dr. Leonard Andrew Schiele (center), Surgeon-General, U.S. Public Health Service, Washington, D. C.

Induction of Canadian Fellows by Dr. Lyon H. Appleby, President of Canadian Chapter

Dr. Max Thorek conferring Fellowship on Dr. Shigero Sakikabana of Tokyo, Japan

Dr. Acuff conferring Fellowship on Dr. Bochana O-Sothong of Siam

Dr. Acuff conferring Fellowship on Dr. Soichi Yanaga of Tokyo, Japan.

Dr. Acuff conferring Fellowship on Dr. Kampee Mallikamas of Siam

Convocation Address

The America of Tomorrow

THE HON. ESTES KEFAUVER, UNITED STATES SENATOR FROM TENNESSEE

When my fellow Tennessean and your distinguished president, Dr. Herbert Acuff, invited me to address this body, he gave me as a subject "America of Tomorrow." That subject, Dr. Acuff said, should give me sufficient elbow room. I should be able to roam the field, without limitations, and develop those topics which I choose.

It is an intriguing thought, this America of tomorrow, but as I contemplated it, I realized that it is a very difficult subject. What will the America of Tomorrow be like? We can roam through fantasy, and romp through space and have a generally delightful time as amateur prophets. But the cold logic of the situation is that we Americans of today cannot fashion the American of tomorrow in a vacuum. For we Americans of today live in the World of today—and that, within itself, will have a profound effect on what the America of tomorrow will be like.

We live in a world which is suspicious and not a little frightened. We live in a world in which science has outstripped the ability of man, and of the institutions —which man has erected—to control the developments of science. We live in a world in which an aggressor nation is again abroad, and has already succeeded by force and by subversion in bending the wills of one-third of the peoples of the world to its will.

We live in a world in which we, through no choosing of our own, have become the leader of the nations who are devoted to a free and a democratic way of life, of the nations which respect the dignity of man.

Yet we live in a world in which none of the old ways for the leader to act is sufficient to meet the conditions that exist today. We cannot act as the British did, in the Nineteenth Century, when through their power at sea they imposed the Pax Britannica on the world. We cannot act as the Romans did in the late Pagan and early Christian worlds when, through their power at arms, they gave the world the Pax Romana.

No, we live in a world in which leadership must employ much more than power alone—much more than just the ability to impose one's will upon the rest of the world through force. This is a comparatively new situation in the field of world affairs. But this is the position in which we Americans find ourselves in the middle of the Twentieth Century. It is a great responsibility—but it is a marvelous chal-

Senator Estes Kefauver of Tennessee delivers Convocation address lenge. I, for one, am happy that I am living through this period which the history books, I feel sure, will record as the period in which the United States either saw and accepted and mastered its challenge, or failed to do that and faded from the scene. Since ours is a young, a vigorous nation, I do not think that we are yet old enough soldiers to fade. I believe that history will record us on the positive side.

A part of the fight that we are in today is one for men's minds and imagination. In this, I think that we Americans are well equipped. For we are the original revolutionaries. I always feel as though I personally am being robbed of a heritage when I see the Soviet posing before the oppressed peoples of the world as a revolutionary.

In a manner of speaking, they had a revolution. They transferred control from an autocracy to a dictatorship. But look at the revolution we had. With no wealth, with no army, and with no navy—but with the real and true love of liberty and freedom in our hearts—our little nation of thirteen struggling colonies challenged and beat the greatest empire the world had known. Having done this we established a philosophy of government in which men and their minds would be free. In his inaugural address in 1801, Thomas Jefferson, then assuming the office of President of this infant Republic, said:

"If there be any among us who would wish to dissolve this union, or to change its republican form, let them stand undisturbed as monuments of the safety with which error of opinion may be tolerated when reason is left free to combat it."

Thomas Jefferson, remember, was then President of the union—but he demanded that the right to disagree be protected even for those who thought there should be no union. It took the soul of a real revolutionary to do this. Contrast this with what happened in the Soviet, where the slightest deviation from party policy means banishment.

Here also—in contrast to the Soviet—we have kept free the fields in which you gentlemen are preeminent—the fields of science and of medicine. As a result great progress has been made—because you gentlemen, by nature, require a free world in which to explore—free horizons for your minds to wander in search of the truths of science.

Because we are fortunate enough to have this background of freedom of inquiry in science and medicine, we are entering this new phase of our existence as a nation in the world with a great advantage over our dictator neighbors who have suppressed freedom of inquiry. The reason for this is simple. I said at the beginning that we cannot approach our position of world leadership in the traditional eighteenth century manner of armed might—that this is also a battle for the minds of men. Because this is true, our medical men have put in our hands a priceless asset in our dealing with other countries and peoples. The medical profession is making a big and important contribution to the foreign relations of the United States. It may be of more substantial benefit than that made by politicians and diplomats.

What is this contribution? It is the fact that today we know how to prevent most of the diseases that ravage more than a billion of the world's people. We know how to prevent epidemics of smallpox, typhus and cholera. We know how to wipe out malaria and typhoid, for all practical purposes.

We not only have this knowledge, we are applying it in a practical way in some twenty-five countries of Latin America, Africa, Asia, and even in some parts of Europe, where preventive medicine is relatively advanced.

Today there are American health missions in Southeast Asia, Greece and Turkey, under the Economic Cooperation Administration—the ECA.

Today there are American health missions under the Point 4 program working in seventeen countries of Latin America, in Liberia and Iran. The total number of Americans working in these missions—doctors, nurses and sanitarians—is small;

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Luncheon in honor of Senator Kefauver.

perhaps a few hundred. But the impact of their work is tremendous.

These few hundred American medical people are just ordinary Americans—with a pioneer spirit. The great majority of them are working at the village level, helping to train their opposite number in those countries, helping to teach modern ideas of health and public service.

This is a new kind of American diplomacy. In this field you will find a young fellow—a brilliant young doctor—from the state of Washington, working with Iranian doctors in setting up village clinics. You will find an experienced medical man from Philadelphia, heading up the health and sanitation mission of the Institute of Inter-American Affairs in Brazil. You will find a sanitary engineer from Rock Island, Illinois, on Point 4 work for the Institute in Ecuador. And you will find another native of Illinois, from Riverdale, advising our Latin American neighbors in the essential field of health and vital statistics. At this moment, a young lady from North Carolina, a major in the Public Health Service, is on her way to the Middle East to teach nursing and midwifery. These are just a few of many examples I could cite.

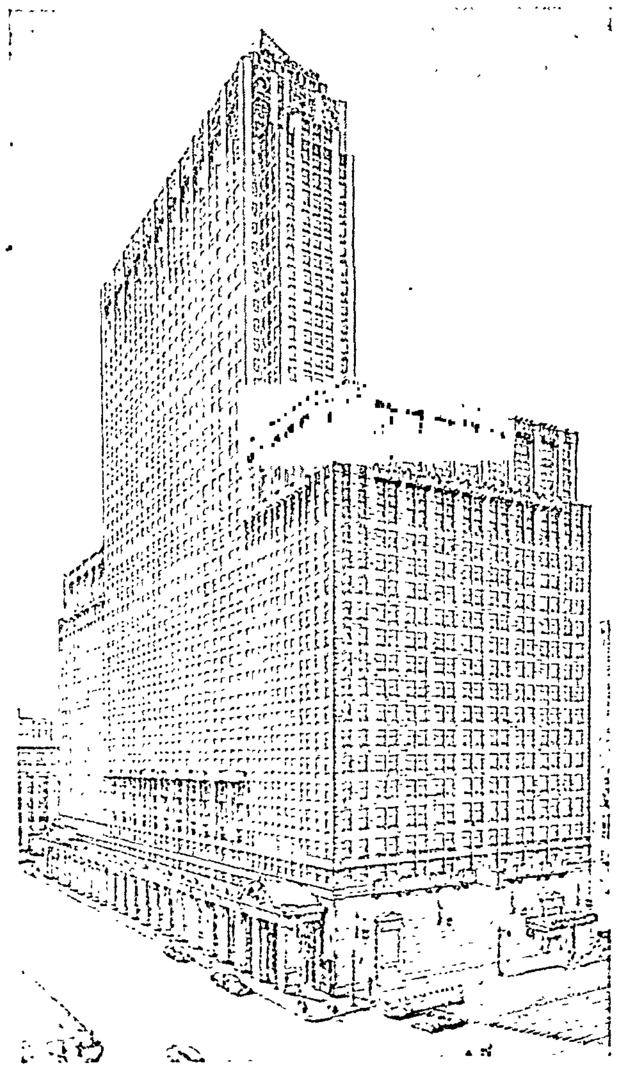
In the hearts of thousands of Europeans, there is one phase of the Marshall Plan which strikes deeper than all the dollars that we, in America, are investing in their nations' future.

They talk about it—not in the language

if high finance or economic recovery—but in the more personal terms of life and death, sickness and health.

To these people, a vial of penicillin rushed from the United States, an injection of American-made streptomycin, or the presence of an American iron lung tells the story of the Marshall Plan better than the American machinery in their workshops or the American food on their tables.

Countless men, women and children throughout Western Europe owe their lives to these and other ECA-financed medicines and laboratory instruments. Since the beginning of the European Recovery Program, about $34,115,000 worth of medicinal and pharmaceutical preparations, and about $9,142,000 worth of scientific and professional instruments have reached the hospitals and homes of the critically ill in Marshall Plan countries.



Chicago Civic Opera House.

Now, I am happy to say, Western Europe is beginning to produce its own penicillin, streptomycin and other antibiotics in fairly large quantities. In fact, most participating nations have made great strides in the manufacture of medicine, although of course they are still far from self-sufficient.

It was the thought of such developments as these that made me oppose in my votes and arguments the cuts recently imposed by the Senate in the economic assistance part of the mutual security program. Just as these nations—our friends—are making headway in the production of their own medicines, they also are making headway in the production of their own guns. The economic assistance program is just what its name implies—assistance to our friends in the world to stand on their own feet. When they can, they will most certainly assist us in firmly resisting encroachments on the free world.

However, to continue with discussion of the part that men of medicine are playing in the new diplomacy of the world today, I am reminded of the launching, as a result of the United States suggestion, of the World Health Organization in the United Nations.

The constitution of the World Health Organization may well be regarded by future historians as one of the most daring international agreements of this era, ranking with some of the work of Thomas Jefferson in his era. Among the unusual features of this document is the preamble, a statement of principles which the signatory governments agreed "are basic to the happiness, harmonious relations, and security of all peoples."

Several of these principles are of particular interest. In adopting them, the members of the World Health Organization pushed forward the traditional horizons of health toward which man has struggled through the ages and at the same time affirmed the close interrelationship of health with social and economic conditions.

The first of these principles is a new definition of health:

"Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."

From the statement of such a goal, the following principles evolve logically:

"The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition."

"The health of all peoples is fundamental to the attainment of peace and security and is dependent upon the fullest cooperation of individuals and states."

"Unequal development in different countries in the promotion of health and control of disease, especially communiable disease, is a common danger."

Thus it is obvious that health has become recognized as a major factor in economic and social progress through the world—and thus in the preservation of peace. The objectives of such a concept spring from two basic social aims, both characteristic of western societies. The first is the preservation of human life. The second is economic well being.

The World Health Organization, like its parent institution, the United Nations, is one of mankind's most stupendous efforts to date to put into practice the ideals of brotherhood and faith in the fundamental goodness of human beings.

The fact that American doctors, free of government domination and secure in the traditional doctor-patient relationship, have led the world in these health developments should be the answer to those critics who seek to destroy our kind of system through a system of socialized medicine.

The steps in the field of health are examples of the type of positive foreign policy that I think we in America should have. We have become the leaders of the world—not through choice but through history. It is time for us to lead. We should lead toward a body of international law, vigorously and intelligently enforced by all freedom-loving nations.

Within the family of nations there now exist enough free societies to outweight the aggressors if they would but use their power of justice and intelligence, and if we trust our own mature weapons of justice and intelligence, of medicine and science, and use them as forcefully as the aggressors use their primitive weapons of armed might.

What should such a body of law encompass? And how should it be enforced? The answers to both these questions are already astir in the hearts of millions who will not settle for less than their faith in that ideal society. This vision has already expressed itself in noble experiments here and there.

Enough such experiments toward a body of civilized international law have been tested to give us vision and conviction to proceed.

We in the United States have seen representatives of the family of nations sit down at conference tables and thrash out their problems. We have seen the power of world opinion force would-be aggressors to sit down and submit themselves to these conferences.

We have seen authoritarian states submit to the majority will of nations. When the General Assembly voted down the veto of the Soviet Union, and thwarted Russia remained within the United Nations, it was a historic day in the progress of mankind. Twenty years ago, Germany and Japan walked out of the League of Nations when thwarted. Today, the power of world opinion has become so strong that even the toughest aggressor thinks twice before flouting it. And before this world opinion, we, the free and progressive nations, have everything to gain. The strong-arm men of jungle force have everything to lose.

We have seen the beginnings of a world

court of justice. We have seen individual aggressors tried, convicted and executed for their crimes against the family of nations. The simple clauses of international law behind the Nüremberg trials can be the beginnings of a body of law which will one day be most helpful in freeing us from the threat of renegade aggressors.

Recently we have seen one man successfully crusade for an international treaty against brute aggression. Dr. Lemkin, of the law school of Yale University, has persisted against terrific odds to get his Genocide Treaty ratified by the United Nations. Briefly, genocide—race murder—means killing or inflicting bodily harm or hardship to weaken the physical strength of any group. And the treaty provides punishment for such crimes against humanity. Broadly interpreted, this treaty outlaws the brutal stock-in-trade of every aggressor group or nation. The humanitarian power of world opinion was so skillfully used that even Soviet Russia dared not oppose the treaty, and voted with the rest of us for its ratification.

This treaty is so well constructed that it passed all arguments before the New York Bar Association. It was recommended in a resolution by that body for ratification by the United States Congress.

It is up to us to see that this convention *is* ratified by our Congress. For by our example others may be encouraged to give this humanitarian treaty reality.

It also is up to us in the Senate to see that the new Japanese peace treaty and security arrangements are ratified without undue delay or haggling. This peace treaty is a fine example of how well we can succeed when we apply real bipartisanship to our foreign policy. I believe that we have in the Japanese nation, the most westernized people in the Far East, a potentially trustworthy friend.

Finally, it is our duty to the world to at least explore the plan which I and a number of my colleagues proposed in our Atlantic Union resolution. It has become obvious to me that the peoples of good will in the world should be united in a much closer union than exists today. The Atlantic Union resolution proposes that the President call a conference of representatives of those nations that signed the Atlantic Pact to determine how far they think their respective nations can go in forming a federal union upon the principle that the states in the United States formed a federal union. This conference would be purely exploratory—but it is a step in the direction we must go if we are to have peace, with liberty, in the world.

We have made much headway through the United States, the Atlantic Pact, and the proposed Pacific Treaty offers great hope. Little by little, the nations whose people believe in freedom, but who are strong enough to repel aggression if necessary, are getting together, becoming more closely united. Let's hope that unity by law for our mutual protection can come faster. Good neighbors, when menaced by gangsters, meet, agree on laws for protecting themselves from the lawless elements. It's time we took further steps to do this in the free international neighborhood. To lead and show the way in this direction is America's greatest challenge.

If we do so, then I think we will have the kind of America of Tomorrow of which you and I will be proud—one in which our freedoms, our liberties, our sense of the worth of the individual man, will be safe and secure. I think that we shall meet this challenge, which is history's greatest challenge for America and for the world.

Banquet Address

What Is Happening in Britain—Fact and Fiction

A. LAWRENCE ABEL, M.S., LONDON; F.R.C.S. (ENGLAND) F.I.C.S. (HON.)

LONDON, ENGLAND

If we leave it to the evolutionists to guess where we came from and to the theologians to prophesy where we are going, we still have left for consideration the fact that we are here, and that we are here at a most interesting time.

Of all the centuries this is the most interesting century; of all the decades of the century this is the most interesting decade; and of all the years of the decade this is the most interesting year; and of all the months of the year this is the most interesting month; and of all the nights of the month this is the most interesting, the best, the unique night.

I have the very great honor to speak to you of what is happening across that little pond, the Atlantic ocean, which separates your back yard from mine. I am no politician but merely a humble member of the medical profession working hard at practical surgery in the heart of London, and doing much voluntary service on the Councils of the Royal College of Surgeons of England and of the British Medical Association, so I know you will not expect too much.

I have premised and do sincerely maintain that this is an isolated, a solitary and never-to-be-repeated, perhaps a never-to-be-forgotten, in fact a unique occasion—and for several reasons: It is unique for me as a foreigner to be allowed the floor on such an auspicious evening; it is unique in that it has never happened to me before, and I can see Dr. Thorek making a mental note that it shall never happen again. It is unique to have so many distinguished surgeons of your great country meeting together voluntarily to study problems the solution of which will mean health, happiness, yes and life itself, to many hundreds nay thousands of our fellow countrymen, and of generations yet unborn. It is unique because we are living at a time of conflict between vastly differing ideologies in the world of politics, finance and religion. It is unique because our two nations, who have stood together side by side through two devastating wars—one against Prussian imperialism and the other against the attempt of the Nazis and Fascists at world domination—once again find themselves shoulder to shoulder in our strong determination to resist aggression and remain free men no matter what the cost.

I would remind you that in Hitler's book "Mein Kampf," he said, "If I and my regime are destroyed my ideology will still continue." It is surely not overstating

Mr. A. Lawrence Abel, banquet speaker.

the case to say that it is the continuation of this ideology that makes it more than ever necessary for the English-speaking nations, and all others who love freedom and liberty, to maintain the closest friendship, affection and collaboration.

It is unique in that Great Britain has had six years of socialism and the so-called "welfare state," and three years of nationalized or socialized medicine. Many there are who believe that control by the bureaucracy of many industries and especially of medicine is not in the best interests of the nation, and I should like to disentangle some of the stark realities of the welfare state from the colorful and illusive pictures which are so often painted.

Before turning to the medical aspects of my theme I would like to give you some impressions of the welfare state in its entirety, and to try to estimate its effects upon my fellow-countrymen.

I feel sure you will agree that our two nations have been brought so close together in the last two wars that we understand each other well enough to be perfectly frank. When Dr. Charles Mayo was speaking at a combined Anglo-American meeting two years ago, he referred to England as the Mother Country. You can imagine how that remark stuck in my memory. Coming as it did from the lips of such a great American, it brought tears to my eyes and a lump to my throat.

In the first place, I would ask you to remember that the welfare state is the object of fierce and continuous party political strife. It is as much a part of day-to-day party politics in London as the policies of Mr. Acheson seem to be in Washington. As you know, the labor government was elected in 1945 and is still in power. The welfare services were part of its platform, and it is claimed that they were necessary. The conservatives, on the other hand, said and still say that the nation was doing well anyway, and the controversy still continues. Nothing has happened to make either party change its point of view, though many conservatives believe that certain aspects of the welfare state have come to stay. They criticize it in that they think it was unnecessary in the first place, that it has been executed in a wasteful and imprudent manner, and that it is having a bad effect on our national habits of thought and action. The conservative politicians, like all politicians, frequently express their ideas loudly and emphatically, and sometimes exaggerate. Therefore, on the whole, the loudest critics tend to be the least reliable. But this does not mean that they are always wrong; and it certainly does not mean that there is nothing wrong with the state itself. It is, however, important to avoid strident and inaccurate methods of pleading. From the point of view of the medical services, the people who know most about it—the public and the doctors—can seldom make themselves heard as clearly as they would wish.

Many complain that the welfare state has accustomed us to being looked after, to expecting that the government or the municipality or the housing department or the education committee is obliged to solve our personal problems whenever they arise and threaten to baffle us. This is rather an unfair statement of a fair complaint. It would appear that we have grown accustomed not to being looked after so much as to *getting something without seeming to have to pay for it.*

In theory the welfare state is easy and fair for all, but no one who has ever tried to get a license to build or the right form on which to apply to the right authority for permission to keep chickens will ever admit that the welfare state makes things easy for its citizens. It is just as difficult to obtain from the authorities such benefits as extra milk, when milk is rationed, or a better house, to which the ailing and the needy are supposed to be entitled. The welfare state itself, in fact, imposes on its citizens many arduous pursuits—pursuits after forms and permits and licenses which tax their ingenuity and stamina.

One of the most serious and real troubles is that the object of all these endeavors is to acquire some privilege for which one has not paid. In actual fact, of course, the privileges and the free milk for the children now and the new houses we may get in ten or fifteen years have been bought and are being bought by the nation as a whole at an extravagant price. We pay the highest taxes we can ever remember in peace time, and still many contrive to delude themselves, when it comes to their turn in the queue, that someone else, some mysterious benefactor, is doing the paying. This, of course, is a terrible delusion.

We are still perplexed as to whether it is dangerous as well as stupid. Man has trained himself throughout the ages to expect to receive from life in proportion to what he puts into it. As a result of insidious propaganda, the masses are being trained to expect to receive *something for nothing*, but I doubt if there is a bigger proportion of my countrymen than of yours who have fallen a prey to this idea. The acquisition of a state of mind in which you maintain that the world owes you a *living in return for little or nothing, is insidious, corrupt and dangerous.* There is little doubt that many of my countrymen have acquired this state of mind since 1945. I believe, however, that they constitute no more than a small parasitic minority; indeed I am sure that the British nation as a whole is still determined today, as it always has been, to earn its own living by its own hard work.

Has this determination been weakened? We have had two bitter disappointments. In the first place, we felt in 1945 that the war was over. We were reluctant to admit even to ourselves that our Russian allies —whose arms our sailors had supplied, and who had shared with us the rigors of battle on the mainland—were no better than the enemy we had managed to defeat together. We were, therefore, not a little discouraged after a long and wearying war to learn that conscription would have to be maintained in peace time, and that our efforts during nearly six years of war had failed to bring peace and prosperity to our little island even for a year or two—that almost immediately we, together with yourselves and the other United Nations, had to engage in a fresh war in Korea.

Another cause for disappointment was to find that our investments—the money we had risked on new ventures in new continents—had all been sold to keep our ships moving, our aircraft in the air, and our soldiers supplied with munitions. But it had to be done, and we should do it again. We had hoped that the prosperous days of 1938 would return, and that we might quickly build up our homes, our churches, our colleges, and our cities once more. It was not pleasant and still is not pleasant to have to submit still to some food rationing and to be allowed once a week only a small portion of beef, equal to half one of the juicy steaks I have been enjoying in America.

Our disappointments appeared permanent until the American nation, in the guise of the Marshall Plan, lightened our hearts as they had not been lightened since the defeat of the axis powers. Words can never express, as from one nation to another, what your timely aid meant, and our hearts were lightened once again when we managed to dispense with Marshall aid some nine months ago. At any moment we should have been able to stand on our own feet, to balance our budget, as has always been our wont, but unhappily the burdens of rearmament are beginning to strain our already fragile economy. In spite of all this, I do not believe that there is any lessening of our determination, but if there is, it is neither serious nor permanent. Any signs you see in us of war exhaustion and disappointment are not necessarily all due to the welfare state, or to any lasting change in the British character, and I am sure that my nation would respond as it did in 1940 to any military challenge.

The threat of enslavement is still clear and obvious enough to both our countries. This threat comes both from the outside and from within. If it came from without it would unite my countrymen together and (may I say) our countrymen more firmly than Hitler and Mussolini ever thought possible, and more firmly than it has ever done before.

The threat of enslavement from within is more insidious but equally dangerous.

As I have told you, I am no politician—nor have I any business connections—and I therefore quote to you some remarks of Mr. Gibson Jarvie, the President of the United Dominion Trust, Limited, and one of the financial magnates of the city of London in a speech on the government's dividend freeze—a few weeks ago.

He said: "In the 'bad' old days, we did get good coal at low prices; we exported vast quantities: and there was ample labor. Today under nationalization and the 'planners' we are woefully short of coal and the coal we get is of bad quality and our exports comparatively speaking are negligible. We have actually been importing coal. Under nationalization gas and electricity supplies are more costly and less reliable. The inefficiency of British transport services—railways and road—has become a joke, but it is a costly and tragic joke. The theoretical planner has proved a very expensive and useless luxury.

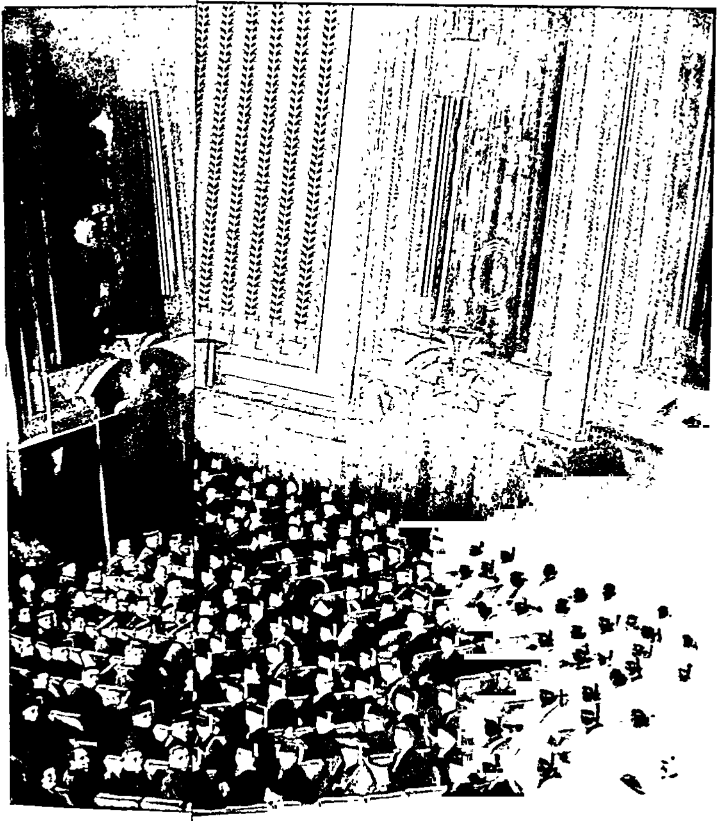
"World history has proved again and again, and is proving every day, that *the individual is more important than the state;* that prosperity and greatness can only follow when there is enterprise, personal ambition, personal responsibility, independence and freedom; that competition is essential: that good work justifies good reward, and that the reward—or much of it—*must be retained by those who have earned it.* There must be incentives. We need strong men today, men of courage and quality and with principles, but in the welfare state such men meet only discouragement, frustration and rank injustice.

"Serious as are the apparent consequences of the chancellor's speech on our economy, it has a still more serious aspect. I refer to the fact that the chancellor's statement of intention—to which he demands immediate response—has no sanction in law—yet! The chancellor's demand, if we accept it, is an attempt at government by arbitrary pronouncement. Government by arbitrary pronouncement is a direct threat to constitutional practice and to our very freedom. It is a threat we cannot afford to ignore if freedom and law are to persist in this country.

"We need a government which will understand that freedom is a prime essential in any prosperous country, and that, therefore, controls of all kinds must be reduced to the absolute minimum and discontinued entirely when conditions permit. It must govern for the nation as a whole and not for any class, and must recognize the value of thrifty individuals and of prosperous companies, and never seek popularity by pandering to the thriftless and shiftless. We need a government which will be equally strong in facing the enemy at home as the enemy abroad, reckless of party or personal consequences. Granted such a government, I have faith in the early recovery of the country; in the reestablishment of its greatness and its influence in international affairs."

In this connection I should like to quote some words often attributed—though I believe erroneously—to Abraham Lincoln:

You cannot bring about prosperity by discouraging thrift.
You cannot strengthen the weak by weakening the strong;
You cannot help the wage-earner by pulling down the wage-payer.
You cannot further the brotherhood of man by encouraging class hatred.
You cannot help the poor by destroying the rich.
You cannot keep out of trouble by spending more than you earn.
You cannot build character and courage by taking away men's initiative and independence.
You cannot help men permanently by doing for them what they could and should do for themselves.



VIC OPERA HOUSE, CHICAGO

Briton or a foreign national, has the right to the services of a family doctor, and that service is "free-at-the-time." A very large proportion of the public favor this system. There is little doubt, however, that there is much thoughtlessness and imprudent greed in the use of the service. Many are stupid enough to believe that because they pay nothing at the time they are getting something "free."

We are anxious to see that the public receive that intangible thing, good medical care—which means early diagnosis and early and good treatment—and that they should not lose this birthright for a mess of pottage.

The exchequer has at last realized that my country cannot afford to make available the unbridled use of such an essential service.

Whereas last year the Health Service cost nearly $1500M. They have now imposed an arbitrary ceiling of under $1200M. and a few weeks ago ordered that 50 per cent of the cost of dentures and spectacles should be paid for by the patient.

A good thing which the scheme was intended to bring about was that the doctors would have more time for the care of the health, in addition to the illnesses, of the people. It was hoped that the removal of a financial barrier would enable the doctor to see patients earlier in the course of their illness, and would bring him into more intimate touch with the normal and the near-normal. However, he is overworked, and required to carry out much nonclinical work in the way of certificates and form filling; there are few opportunities for indulging in the real work for which he was trained, and his clinical excellence suffers. If, owing to a proportion of his time being taken in nonimportant matters, his day's work is disorganized, then those who are really ill cannot be attended to. The plans envisaged that the doctor would be happy and not frustrated in his work, but in many instances this does not occur. The plans were meant to make it easier for a young doctor to get into practice, and give him an easier time once he is established. In many cases this is not so. The planners promised that they would carry out the recommendation of the Spens report (which was a preagreed document), and that the doctors should be able to earn in the service the same (or greater) financial reward as they did before, with prewar values translated to the present day. All know that these promises have not been fulfilled. The plans included ample facilities both for postgraduate study and for relaxation, but in many instances this has not come about.

The Hospital Service.—With regard to the hospital service, the repeated suggestions of the profession that hospitals should be grouped have been adopted.

The state has assumed financial responsibility for seeing that hospital beds are where they are needed and that they are properly equipped. We have pressed for something like this for many years, and it is what the politicians guaranteed. But those of you who have had experience of bureaucratic promises, whether oral or written, know what a difference exists between the promises and what actually comes about. Today, in many areas, it is more difficult for a patient to get into hospital. In some places there are waiting-lists of twelve to eighteen months. Great difficulty is often experienced in getting accommodation for an emergency, for the aged, and for the chronically ill; so that, although I say it is good for the state to assume financial responsibility, this is true only if the promises are fulfilled.

The planners promised that everything should be done to encourage the specialist not only to be happy in his public work but to carry out his private practice under the same roof. In the administration of the plan the number of private beds has been diminished, the charges have rocketed, and the effect has been that in many districts private practice for the specialist has almost disappeared.

The private wards and private blocks

attached to the former voluntary hospitals were donated by the public, so that those of lower income limits who had been thrifty and hard-working enough to be able to save and so to afford extra comforts could use those beds when they were ill. These private and semiprivate facilities have been, and are being, gradually removed from the reach of those for whom they were provided, and this in spite of the fact that the government promised that hospitals should be utilized for the purposes for which they were set up.

With regard to hospital finance, this now depends on public finance. During the first year of the service the minister ordered a 10 per cent cut in hospital expenditure, and recently ordered a further 20 per cent cut in expendable hospital money. Someone must suffer—the patients, or the service, or the consultants.

A few weeks ago the medical staff of at least two teaching hospitals were told that they must make "voluntary" cuts in their salaries.

A Tragic Aspect.—Let us now turn to some general observations.

The first was summed up by Dr. Wand (the leader of the Family Doctors' Committee) at the annual meeting of the British Medical Association a short time ago, when he said: *"The government plunged headlong, against our advice, into a comprehensive medical service."* This is perhaps the most tragic aspect of the matter, and, partly because of the bigness and partly because of the suddenness of the scheme, many pitfalls have arisen. It meant that many doctors entered the service because of the blackmail of economic pressure. It meant that many entered the service with ill-will, whereas with tact, careful negotiation, and reasonable compromise our help and goodwill would have been assured, because from first to last the main object of the profession was to spare no energy to establish the best possible health service for the nation.

In this connection I quote words of Miss Jennie Lee, who is a member of Parliament and the wife of Mr. Aneurin Bevan, who was until recently the Minister of Health. As reported in the official Parliamentary report for June 21, and speaking in the debate on the government's capital investment programme, she asked: "Will the Chancellor of the Exchequer please try a little harder to meet the real fear in many of our minds that by trying to do too much too soon he will not get as good a defence programme as otherwise he would; and will he also keep in mind that if he wants the best results he needs the cooperation of men and women as well as machines—men and women who really understand what he is trying to do and what he has got to do?"

We said the same thing to the planners many times. Would that she had talked in her sleep four or five years ago.

Some General Reflections.—Time does not permit me to disclose to you all the evils of gigantic burocratic planning whether in industry or medicine. That suffering is often bound to occur in order that a plan may be carried out will be agreed by all. Sometimes it is the community that suffers, sometimes it is the doctor; but too often it is the one for whom the plan was meant to function to avoid suffering—the patient.

The bigger the plan the greater the cost would appear to be, and the more impersonal. A large officialdom is out of touch with the individual workers. Although the officials are usually clever people on small matters, many of them are ignorant and hopeless in big matters. So we have come under the control of inexperts, and are subject to remote authority.

Another general reflection is that after three years the government, feeling that it has got you in its grasp, gets dustier and dustier in its attitude towards you. If you are an independent profession the government listens to you, listens with respect, and sometimes even takes advice. Parliament has already begun to make changes. The new Minister of Health, in a letter of May 23, recognized "the difficulties which many doctors are known to be experiencing." We look forward with confidence to such further amendments that Dr. Wand will no longer be able to tell him—as he did recently—that there is "considerable frustration, that the young man was feeling and saying that there was nothing to go for, and that the man who was established felt that he was being exploited," and "that it was his business to see that there was no such frustration in the ranks of general practice, as would make it less good than it should be."

How to Improve the Service.—Can the scheme be improved? first, we must ask another question: How is it possible to get back into the people a sense of moral responsibility for their medical care? I believe the answer is that only by making a payment, if only a token payment, at the time of the receipt of the service will each individual be made to feel that he himself is responsible for the careful use of that service. But, I hear you say, you doctors have always stipulated that there should be no financial barrier between the patient and the treatment he needs. I agree. "Barrier" is a strong word—it means an iron curtain: but "no financial barrier" does not mean that there should be no financial charge whatever.

How much, let us ask, constitutes a barrier? I would remind you that out of the weekly contribution to national insurance the family doctor receives less than three cents. In England twenty cigarettes cost forty-nine cents, and each cigarette costs two and a half cents. The family doctor, therefore, out of the contribution receives the equivalent of approximately one cigarette a week! Would the equivalent of one or two cigarettes charged for the container of the medicine constitute a financial barrier? Would the equivalent of three or even six cigarettes constitute a financial barrier for a prescription or for an X-ray examination?

The government recently announced, through no less a person than the Prime Minister, its acceptance of the policy that fourteen cents should be charged for each prescription. Had it had the moral courage to implement that policy, there would have come about overnight a new sense of personal responsibility, a new awakening of moral integrity, a complete alteration in the economics of the service, a saving, according to Mr. Attlee, of $30,000,000 a year. It would have proved a financial deterrent to any irresponsible or frivolous use of the service. It would have largely restored the independence of the doctors. It would have meant that each family took a more intelligent interest in its own minor ailments; it would have eased the heavy burdens of the family doctor, and given him more time to attend to matters of health in addition to those of sickness.

I am reminded of the government doctor in Africa inoculating the population against yellow fever. Although the service was free, and they were told it was free, each and every one insisted on paying his penny or twopence, in gratitude for the white man's magic. These men had enough sense of moral responsibility to feel unable to accept "something for nothing."

Token payments.—Secondly, what can be done to ensure that the people do not retain the idea that someone else is paying for the service, but are made to realize that they are paying for it themselves? The answer is, I believe, the same: that a token charge for many more of the details of the service should be made. At last the government is making a token charge for teeth and spectacles. This principle could be extended. A charge could be made for the container of the medicine, and a charge for the prescription, both of which are levied in the isle of man. Similarly, there should be a token charge for an X-ray film, and a hotel charge for a hospital bed. Even a weekly one-dollar hotel charge for a hospital bed would increase the public's responsibility, care, and thoughtfulness in the usage of hospital beds. Because I know of no rooming house that will put you up for a dollar a week, I suggest that a higher figure would be reasonable, except of course where even this sum would constitute a financial barrier. As the prime minister suggested in the case of old-age pensioners in relation to the prescription charge.

There is some case to be made out for the individual doctor's being allowed to charge a fee for the first consultation in any particular illness. I realize the difficulties of this, and it might be better to have a small charge for each consultation. If every family doctor were allowed to charge only half a dollar, or even a dollar (the equivalent of forty cigarettes) for each first consultation, it would constitute a direct award for his work, would ease the load of the exchequer and of the taxpayer, and the community would be protected against itself. A first-instance consultation fee would lead to a more intelligent and responsible usage of the service by the patient and an infinitely healthier doctor-patient relationship.

I fail to understand why we should have only a subsidy for food, and not a subsidy but a total payment for medical care.

I am aware that there are those who declare that it is immoral to receive a direct fee and that all doctors should be dependent on the state. I maintain that the converse is true. I would argue that we, as doctors, are most concerned that *a patient should have a direct positive sense of his own responsibility.* We know how vital it is to have a response by the patient for his own welfare. He must be interested in his own recovery, for without this he might as well spend the rest of his days in a government hospital. An essential part, therefore, of therapeutic treatment is that it should include a token transaction.

Position of the General Practitioner.—What is needed in the field of general practice? Let us again cite what Dr. Wand said at the annual meeting a few days ago. The minister of health had recently written agreeing that the Spens report remains the basis of the remuneration of the family doctor. He required that there should be a ceiling of less than $1,200,000,000 on the whole service, and a redistribution of the doctors' moneys dependent upon a reduction of the drug bill. The doctors said they had given the fullest cooperation and earned the right to a just settlement; that their responsibility was second to none, as they were on duty twenty-four hours a day, seven days a week. They claimed that their status has a definite financial bearing and that their merit can be measured only by remuneration.

The doctor's net remuneration of less than three cents a week is subject to tax, and is continually falling on account of increasing expenses. Spens said that a definite proportion of doctors should earn $7,500 a year at prewar values and, let me add, only in the last few days has the chancellor told us that one dollar prewar is today worth less than 50 cents.

Dr. Wand and his committee want to solve the difficulties of the young man who is entering and who has entered practice, to ease the burden of work and frustration, and to do away with the feeling that there is nothing to aspire for.

Good and steadily improving doctoring was practiced in the past, and we are anxious to keep it good.

The profession maintains that its first duty is to its patients, and that it is highly improper that the amount of professional remuneration should be dependent upon the economics of prescribing; doctors do not want their remuneration to be dependent upon depriving patients of necessities.

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The Consultants' Requirements.—
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of repeated requests medical committees are not statutorily established.

For ages a spirit of partnership has existed between the lay and medical elements in hospital work. For many generations hospitals have been founded, have been maintained, and have flourished in this spirit. Now we are faced with the growing danger that instead of being partners we may become subordinate employees.

In the second place, consultants want to have a much greater say in the choice of their own colleagues. The present methods of making medical staff appointments are most unsatisfactory. Except in some of the teaching hospitals the medical staff now no longer have the official opportunity of recommending appointments to their board. Appointments are made on the recommendation of a mixed lay and medical committee, with a lay chairman, and with minimal representation of the staff, who often have not had the opportunity of even examining the applications, and seldom, if ever, have the official right to see the candidates. This disturbance of the traditional method of making appointments has made the future of hundreds of junior staff very uncertain, and their present state is one of despair.

In the third place, the consultants have always shown themselves anxious to be the constant advisers to the government. We have frequently said that we want to help; that our advise is always ready if only the state will receive it. Our real object is the best service, and this is shown by the fact that we have not been behind other members of our profession in never sparing ourselves. We want machinery for continued consultation between our democratically elected representatives and the government—and not only by bodies whose members are chosen by the government.

Problems have gone wrong because the government formed its own ideas on subjects it knew nothing about, instead of being guided by the profession. Some of its decisions have earned widespread public derision. But still we have to fight to be continually consulted and for the government to accept the advice of the elected members of the profession.

Democratic Election.—Lastly, and most important of all, we want a free democratic election to all stages of the partnership. We want the medical staff of each hospital to have the right to elect from among their number representatives to all committees. If all statutory and advisory committees were democratically elected they would have a great moral force, which is so sadly lacking in many committees and boards today.

Today it is forbidden to ask for any financial assistance for any government hospital (and there are very few others) but the consultants would like to see a reawakening of local interest in hospitals on the part of the lay public, and the lay members of hospital management committees democratically elected. In parenthesis, I may say that this local interest would be increased if the right to appeal for voluntary help—both financial and personal service—were restored to the local hospitals.

If we set about the job of using our influence to promote the best for the health of our people in a constructive spirit, we shall so interpret the "enabling act"—as it is often called—that *we* shall be enabled to do the work for which we have been trained free of the shackles of bureaucracy, and we shall save the politicians from themselves and our sons and successors from the politicians.

If the art, the science, and the practice of medicine are to be crippled and stultified and frustrated by the baneful influence of elections we are lost indeed. If the doctor, while he exposes his own body to the dangers and fatigues of hard and conscientious medical work, sees the very fountain of his strength becoming more and more blocked by corrupt regulations, and hears the mirth and riot of ignorant and luxurious laymen drowning the groans and complaints of the sick, the suffering, the tuberculous, and the aged, and the moanings and discomfiture of his colleagues

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General News Notes

American College of Cardiology: The first country-wide assembly of the American College of Cardiology has been called for October 5 and 6 at the Hotel Statler in New York City. The College, which was organized in 1949, restricts its Fellowship to specialists in cardiac and vascular disease and to full-time scientists and teachers doing research in circulation problems and related subjects, such as circulatory anatomy, physiology, pharmacology and pathology. There are no lay members, though any physician who is interested may be admitted to membership in the prospect of future advancement. The close association of basic science investigators and practicing specialists is unusual in a Medical Specialty College, and is therefore expected to result in an unusually successful and informative program.

The evening of the 5th will find the Fellows guests of the local New York Society for Circulatory Diseases at an informal dinner at 6 p.m., after which there will be a short business meeting and a scientific session. A hitherto unpublished report of several hundred cases of surgical treatment of mitral stenosis will be presented by Dr. Robert Glover of Hahnemann Hospital, Philadelphia, and will be discussed by Dr. Lester Breidenbach of Beth David Hospital, New York.

The College itself will hold an all-day session on the 6th, when it will consider and discuss all aspects of coronary disease, anatomic, pathologic, symptomatologic, diagnostic and therapeutic.

The highlights of the program are as follows:

Normal and Pathological Anatomy of the Coronaries
Monroe J. Schlesinger, M.D., Director of Pathology, Beth Israel Hospital, Boston
Discussion opened by Leonard E. Field, M.D., New York

Coronary Circulation
Donald E. Gregg, M.D., Chief of Dept. of Cardiorespiratory Diseases, Army Medical Center, Washington, D. C.

The Biochemical Nature of Angina Pectoris
Prof. W. Raab, Professor of Experimental Medicine, Burlington, Vermont
Discussion started by Bruno Kisch, M.D., New York

Clinical Symptomatology of Coronary Insufficiency
Capt. Ashton Graybiel, M.C.; U.S.N., Director of Research, U. S. Naval School of Aviation Medicine, Pensacola, Florida
Discussion started by David Scherf, M.D., New York

Pharmacology and Therapeutics in Coronary Diseases
Dr. Carl F. Schmidt, Professor of Pharmacology, University of Pennsylvania, Philadelphia
Discussion started by K. I. Melville, M.D., Montreal.

Other important papers will also be presented.

The series of sessions will be opened by Dr. Franz M. Groedel, president of the College, an internationally famous cardiologist and author of numerous books and papers relating to cardiology. Many of the lecturers and discussants are chiefs of important research and hospital centers in civilian, military, naval and aviation medical circles.

After the final scientific session the College will hold a dinner in the Georgian room of the Statler Hotel. Information about registration for the meeting and membership in the College may be had by addressing an inquiry to the office of the President, Dr. Franz M. Groedel, at 829 Park Avenue, New York 21, N. Y.

American Academy of Obstetrics and Gynecology: The National Federation of Obstetric-Gynecologic Societies has reconstituted itself as The American Academy of Obstetrics and Gynecology. This action was taken at a Federation meeting held on June 13, 1951, in Atlantic City, in response to the long-felt need for a national society for obstetricians and gynecologists based on individual and personal membership.

The following officers were elected:

President: Woodward D. Beacham, New Orleans, Louisiana

President-Elect: Carl P. Huber, Indianapolis, Indiana.

Vice-President: Louis H. Douglass, Baltimore, Maryland

Treasurer: Herbert E. Schmitz, Chicago, Illinois

Secretary Ralph A Reis, Chicago, Illinois Executive Board Robert G Craig, San Francisco, California, John L Parks, Washington, D C, Charles D Kimball, Seattle, Washington, Samuel B Kirkwood, Winchester, Massachusetts, Philip F Williams, Philadelphia, Pennsylvania

The Academy was incorporated on Aug 4, 1951, as a nonprofit corporation under the laws of the state of Illinois Its objects are listed in the Constitution and Bylaws, which were adopted at a meeting held at Hot Springs, Virginia, on September 5 They include "fostering and stimulating interest in obstetrics and gynecology and all aspects of the work for the welfare of women which properly come within the scope of obstetrics and gynecology"

The first business meeting of the Academy will be held at the time of the meeting of the American Congress on Obstetrics and Gynecology in Cincinnati, March 31 through April 4, 1952 The First Annual Clinical Meeting will be held in Chicago during the winter of 1952-53

Applications for Fellowship may be obtained from Ralph A Reis, Secretary, 116 South Michigan Avenue, Chicago 3, Illinois

Congress of European Haematology Society· The third congress of this society will take place in Rome, October 3 to 6, under the auspices of the Italian Haematological Society The program includes a discussion of Isotopes, Histochemistry and Modern Microscopy, Reticuloses, A C T H and Cortisone, and Coagulation Inquiries may be mailed to Dr H Torrioli, 24, Via Genoa, Rome, Italy

Medical Association for the Prevention of War: This association met at the Royal College of Surgeons, London, on June 8 Rules, policies and elections of officers for the coming year occupied the greater part of the session The high ideals of the organization brought out a large attendance of doctors interested in the prevention of war

Essay Competition. The American Urological Association announces an essay contest, with the following rules

1 Competition shall be restricted to urologists that have been in practice less than five years, and those in training to become urologists whose work shall be sponsored by their mentor, a member of the A U A, the offering to represent the individual work of the essayist
2 The subject matter of the essay shall be the result of some specific clinical or laboratory research in Urology Papers that have been previously published, will not be considered
3 All essays, along with pictures and tables, shall be submitted *in triplicate* with no indication as to the identity of the writer or his institutional affiliation
4 The offering shall be distinguished by legend, and in a sealed envelope with the distinguishing legend on the outside must be the name, address, and institutional affiliation of the competitor
5 The essayist shall also give the following information
   (a) Name of medical school from which he graduated and date when he received degree of Doctor of Medicine
   (b) Urological training In what clinic or with what urologist and for how long? (Be specific as to dates, positions held, whether in a hospital or in an out-patient department, etc Name of hospital and location)
   (c) Length of time in private practice of Urology (Please be specific as to dates)
   (d) Percentage of present practice which is urological
6 Essays shall be in the hands of the secretary of the American Urological Association on or before February 15, 1952
7 The winner of the first prize shall have a place, with special designation on the program of the forthcoming meeting of the American Urological Association, that is to be held at the Chalfonte-Haddon Hall, Atlantic City, N J, June 23-26, 1952
8 All papers presented at the annual meeting of the American Urological Association become the property of the Association and are published in the official magazine (*The Journal of Urology*), subject to the approval of the Editorial Committee
9 The Committee on Research shall decide which of the essays shall receive the $500, $300 or $200 prizes, and shall also be privileged to omit any or all awards if no essays are deemed worthy.

Further inquiries should be addressed to Charles H de T. Shivers, M D, Secretary, Boardwalk National Arcade Building, Atlantic City, New Jersey

New Books

Malignant Tumors of the Bladder: Their Treatment Via the Open Bladder. By Raymond Darget. Paris: Masson et Cie, 1951. Pp. 105, with 83 illustrations (1 in color).

This work is timely and authoritative. The treatment of malignant tumors of the bladder is still subject to controversy. Not only from the diagnostic but from the therapeutic point of view many problems are involved. Some surgeons recommend partial removal of that portion of the bladder which contains the neoplasm; others perform more or less radical cystectomies. Regrettably, patients frequently under observation when the tumor has reached proportions imposing difficult therapeutic problems. Darget leans strongly to the conservative care of these tumors. He has devoted many years of study to the subject, and, judging by his experience, his conclusions on radium treatment of malignant disease of the bladder seem justified. He has an experience of twenty-five years. Of course, successful radium therapy requires knowledge and experience.

The work begins with an introductory discussion of general considerations concerning treatment of tumors of the bladder. It begins with a description of the vesical lymphatics and lymph nodes. It discusses the chemical aspects of malignant neoplasms of the bladder and their anatomicopathologic character. In the second chapter the question of diagnosis is taken up, beginning with cystostomy, roentgenologic evaluation, cystography, intravenous urography and other methods of procedure. The third chapter, which concerns the surgical treatment of malignant tumors of the bladder, consists of a discussion of (1) partial cystectomy; (2) total removal of the bladder, and (3) radium therapy. Here the author describes his methods and his detailed operative technic, which is characterized by thoroughness and analytic exactitude. Here also is found a discussion of so-called inoperable tumors. Ancillary treatments are pointed out, and the work concludes with a chapter on prognosis and conclusions. The latter are extremely hopeful. What is considered in many quarters a hopeless situation seems to be brightened by the conclusions reached by Darget.

It is to be hoped that this work will be translated into English and that; it will find its way into the hands of every medical man who is confronted with the problem of tumors of the bladder.

The illustrations are excellent. The paper is of first-class quality. All in all, it is a direct contribution to the literature on this subject.

M.T.

Preparation of Photographic Prints for Medical Publication. By Stanley J. McComb. Springfield, Illinois: Charles C Thomas, Publisher, 1950.

This is not a detailed textbook on medical photography, but an analysis of the common defects of medical photographs, with suggestions for improvement. According to the author, there are basically two divisions of the photographic procedure in which corrections and improvements can be made. The first of these is the preparation of the subject matter for photography. Here the photographer must consider the setting or background, the position of the subject, the relation of the size of the reproduction to the original, the lighting effects, and the adequacy of the photographic emulsion. He must also consider whether each picture is a unit or whether it is a part of a series of photographs. The second division in which corrections and improvements can be made is the finishing of the photograph. This covers the processing, the possible need to touch up the negative, and the arrangement of the pictures on the page. This book can be recommended to both experienced and inexperienced medical photographers to be used as a technical checklist.

From a Doctor's Heart. By Eugene F. Snyder. New York: Philosophical Library, 1951.

This discussion of heart disease is twofold. The author writes of the physical care of the heart, pointing out in general terms the advisability of living prudently. The scientific account of heart disease and its care is written in simple language so that it can be understood by patient as well as the physician In the other phase of this work, which deals with the spiritual health of the heart, the author reveals an idealistic approach to life He expresses the need of sympathetic understanding of humanity and faith in the ideals of democracy, and he promotes friendly and sympathetic interracial and interfaith relationships Throughout the book the author honors the general practitioner, the mainstay of the medical profession

Dr Snyder advances his ideas in the form of a conversation with his wife (who is also a doctor) and his son Undoubtedly the experiences which were the precipitating cause of his heart ailment were also the factors which evolved the philosophy expressed in this book Dr Snyder was born in Russia, where he lived until he was forced to leave because he was considered a antirevolutionary by the Communists From Russia he moved to Czechoslovakia Forty-three days before Hitler invaded Czechoslovakia Dr Snyder left for the U S, and he now practices medicine in Chicopee Falls, Massachusetts

M T

Nonoperative Treatment of Perforated Gastroduodenal Ulcer By Marc Iselin, Simone Peret and Jean-Marie Toutain Paris Editions Medicales Flammarion, 1951 Pp 174

This condensed booklet was prepared to direct the attention of the medical profession to the nonoperative treatment of perforated gastroduodenal ulcers The presentation is excellent In the first chapter the history of the subject is discussed, in the second, the physiopathologic basis of conservative treatment of this condition The third chapter analyzes the results of nonoperative treatment A global perspective is here given by means of tabulated data, and the results of expectant treatment are compared with those of surgical intervention The research done by Iselin in this field is highly illuminating, and from these statistical studies he makes an excellent case for nonoperative treatment Of course, on this question the pendulum is swinging back and forth, and, although the majority of surgeons insist upon prompt intervention (either simple closure of the perforation or closure supplemented with other procedures), Iselin, after evaluating the various available technics in a cool, objective and unbiased manner, concludes that nonoperative treatment is followed by results as good or better The mainstay of the nonoperative treatment recommended is aspiration supplemental by maintenance of the electrolyte balance, this is discussed in Chapter 4

This essay is highly provocative and offers much food for thought It is based on sound judgment and presented in a lucid, sound, analytical style Much of its value is due to experience, sound judgment and meticulous analysis Since it is published in French, it should be translated into other languages for as wide a circulation as possible

M T

The Kidney: Medical and Surgical Diseases By Arthur C Allen New York Grune & Stratton, 1951 Pp 583, with 1115 illustrations

This is an excellent volume which should be in the possession of all student surgeons and internists In this era, when so much is written about electrolytic and fluid balances, new methods of investigation of renal function and the obvious rise in the incidence of certain renal disturbances, such as hemoglobinuric nephrosis and hypertension, with regard to which the concepts have changed remarkably The physiologic background of renal function has been subject to profound study and evaluation, therefore, this opus is timely, instructive and important

The work opens with a discussion of the embryology of the kidney This is followed by sections on anatomy, normal and abnormal renal physiology All are excellent, particularly the section on uremia A much neglected clinical entity is prerenal azotemia In the presence of this condition life depends on early recognition and prompt treatment This disease should be kept constantly in mind in dealing with the various forms of anuria

The rest of the work is devoted to malformations, diseases of the glomeruli and diseases of the tubules It is concluded by a comprehensive index The illustrations are well chosen, instructive and splendidly executed The publishers have done an outstanding job in selecting the type, paper, illustrations and binding A likeness of Richard Bright embellishes the cover

Again, the author should be congratulated on undertaking a difficult task and accomplishing it so magnificently

M T.

Complete Inversion of the Appendix. Boon, T H., and Sibley, J. C., Lancet 1:1304-1305, 1951.

A case of complete inversion of the appendix without concomitant intussuception of the ileum of cecum is presented. (Only 8 similar cases were found in the literature.) Profuse intestinal bleeding was the presenting sign.

Although neither the clinical picture nor the laboratory and roentgenologic reports indicated the presence of this lesion, roentgen study in an occasional case of this type do suggest that a papillomatous lesion of the cecum is present.

In any operative case in which the appendix cannot be located, the presence of complete inversion of this structure should be suspected. It would also be wise to include this lesion in the differential diagnosis of lesions of the colon producing intestinal bleeding.

MEYER O. CANTOR, M.D.

Sequelae of Radical Gastric Resections. Brain, R. H. F., Brit. M. J. 1:1137-1140, 1951.

Advances in surgical technic and a clearer understanding of water and electrolyte balance, together with the free use of blood, have made it possible to perform the most extensive operations with a relatively low mortality rate. For this reason many such operative procedures are performed without regard to distressing after-effects, which in some cases are so distressing that the value of the original operation is questionable.

Thirty-three patients subjected to total or nearly total gastrectomy were followed up by the author to determine the incidence and type of change caused by the surgical procedure. The capacity for food was found to be invariably decreased; as a result, almost all the patients lost weight. The dumping syndrome appeared in 20 of the patients, but not to a degree that limited the capacity for food. In 6 patients the symptoms associated with this syndrome were severe, and in 2 patients they were found to be due to distention of the distal jejunal loop. Diarrhea was present in almost all cases in the immediate postoperative period but had fairly well cleared up in three months. Steatorrhea due to faulty fat absorption was demonstrated in all the patients thoroughly investigated. Vitamin B deficiencies were observed in 9.

Studies of fat metabolism seem to indicate that the chief cause of loss of weight and failure to regain weight after total gastrectomy is due to (1) a poor capacity for food, (2) the dumping syndrome and (3) malabsorption of fat. Vitamin B deficiencies so often observed can be readily corrected by oral administration of B complex and eradication of infection.

MEYER O. CANTOR, M.D.

Sacrococcygeal Teratomas in Infants and Children. Gross, R. E., Clatworthy, H. W. Jr., and Meeker, I. A. Jr., Surg., Gynec. & Obst. 42:341, 1951.

The authors present a complete discussion of sacrococcygeal teratomas, based on a series of 40 cases observed at the Children's Hospital of Boston during the past thirty years. Twenty-eight were encountered in the past ten years.

The tumors occur at widely varying ages, but generally, in early life, they are most commonly observed at birth or shortly thereafter. They are composite masses composed of more than one germ layer, usually all three. They may be benign, well encapsulated, cystic or solid masses, or any part may become a fast-growing malignant lesion and, metastasizing widely, result in fairly quick death. The size of the mass does not necessarily indicate the degree or malignancy. They seem to be stimulated by inadequate surgical treatment and an apparently benign tumor may recur as a hopelessly malignant one. Histologically they vary widely, from completely undifferentiated to highly differentiated tissue; but all contain structures from at least two germ layers. In the authors' opinion these neoplasms arise from the primitive knot.

Clinically, these growths occur predominantly in the female (32 instances in 40) and are not usually accompanied by other anomalies. Their incidence is higher in families that possess a twinning tendency. The larger growths tend to have large presacral extensions that displace the rectum and anus forward, producing partial obstruction. Further extension produces partial ureteral blockage. No neurologic defects were noted in the sphincters, etc.

Roentgen study frequently confirms impression of large retrorectal extension In the present series, bony destruction was noted only in cases of recurrence Invasion of the spinal canal was occasionally noted, and metastases were observed in the lungs and in distant parts of the skeleton on roentgen examination

This lesion must be differentiated from meningocele, chordma, ependymoma, and pilonidal cysts and sinuses—often a difficult feat

Every patient with sacrococcygeal teratoma should be offered surgical intervention, which should be complete and radical Open drop ether is used for anesthesia and the antecubital vein is cannulated for the administration of blood and fluids The technic of the operation and consists, in brief, of making an inverted V incision above the tumor after a vaseline pack has been placed in the rectum and sectioning the fascia down to the coccyx, which is completely excised The tumor is freed by sharp and blunt dissection from the rectum and allied structures, and its lower cutaneous pedicle is divided The levators are sutured to the presacral fascia and the skin is closed, after which the pack is removed from the rectum

In the authors' series there has been only 1 postoperative death (due to diarrhea) and no infection in the past ten years There has been no incontinence either urinary The total number of children cured was 29 The authors state that if prompt and thorough surgical treatment is employed the vast majority of patients can be cured

HOWARD S STERN, M D

Amniotomy for the Elective Induction of Labor at or Near Term Bernard J Hanley, Bernard J West J Surg 99 262, 1951

The first recorded induction of labor took place in England in 1732, when a midwife, Mary Donnelly ruptured the membranes in a patient with a contracted pelvis

The first physician to perform this simple procedure was a Dr Macaulay, who in 1783 ruptured the amniotic sac in a similar case, and achieved the birth of a live baby

In 1922, Watson was responsible for a renaissance in interest this subject

Hanley carried out 653 elective aniotomies on private patients between 1940 and 1950 These represented about 10 per cent of all obstetrical patients managed during this period at his hospital There was no maternal mortality and maternal and fetal morbidity rates compared favorably with those patients who started labor spontaneously

The gross fetal mortality was 1 2 per cent If babies born with defects incompatible with life are excluded, a corrected fetal mortality of 0 5 of 1 per cent is arrived at Prolapse of the cord did not occur The average duration of labor was much shorter than when labor was uninduced

No apparent anatomic injuries attributable to induction were sustained by the soft tissues of the pelvis

Dr Hanley includes an excellent report on his own series of labor inductions As he himself states, ' The sole moral and legal responsibility of elective induction of labor rests squarely upon the shoulders of the operator "

EDMUND LISSACK, M D

Allergy and an Acute Condition of the Abdomen from the Surgeon's Viewpoint Sneierson, H, and Mazar, S A Am J Surg 81 279, 1951

Allergic manifestations of the gastrointestinal tract are characterized by serohemorrhagic effusions into a localized portion of the bowel wall There is a variable amount of clear to serosanguinous fluid in the abdominal cavity, the affected part being thickened and edematous and fairly well demarcated, sometimes with hemorrhagic spots in the subserosa and mesentery, the arterial circulation being intact The bowel and mesentery are usually involved in a blocklike fashion, in contrast to the V shaped involvement associated with mesenteric thrombosis This picture is subject to various aberrations Allergic conditions in the past have been reported as Henoch's purpura, angioneurotic edema, Shonlein's purpura and the like

The authors review some of the literature and demonstrate that allergic disturbances are probably more prevalent than is recognized They all 1 case to the literature The symptoms and signs are sufficiently characteristic and may be recognizable at operation The similarity of allergic manifestations of the bowel to those of mesenteric thrombosis and regional ileitis has been noted, and the use of epinephrine and the antihistaminic drugs as a means of differential diagnosis is suggested

T, M D

In Memoriam

ISAAC ARTHUR STOLOFF

M.D., F.I.C.S.

On December 18, 1950, Dr. Isaac Stoloff, retired surgeon of Woodstock, New York, died at his winter residence in St. Petersburg, Florida. He was 64 years old. Born in New York City, Dr. Stoloff received his medical degree from the Long Island College of Medicine in 1907 and served his hospital internship at the New York City and Lying-in Hospitals. He then became associated with Dr. William Seaman Bainbridge at the New York Polyclinic Medical School and Hospital. Except for a period spent in Vienna doing postgraduate study, Dr. Stoloff had been affiliated with New York hospitals for thirty-seven years, among these the Children's Hospital as consulting surgeon, the Beth David Hospital as attending traumatic surgeon and the Hospital for Joint Diseases as associate surgeon. In a teaching capacity, Dr. Stoloff was professor of surgery at the Polyclinic Medical School and Hospital and assistant professor of surgery and attending surgeon at the New York Medical College and Flower Hospital. Since his retirement he had devoted much of his time to painting; the Woodstock Art Gallery presented a one-man showing of his work in 1948, and the American Physicians Art Association in New York had honored him with awards for his painting.

In addition to holding a fellowship in the International College of Surgeons, Dr. Stoloff was a member of the National Gastroenterologic Association, the New York State Medical Association, the New York Physicians Medical Society (past president) and the New York Academy of Medicine.

THADDEUS ZIGMUND XELOWSKI

M.D., F.A.C.S., F.I.C.S.

Dr. Thaddeus Z. Xelowski, 74, died on August 30 in his Chicago home. Dr. Xelowski, who was graduated from the Pharmaceutical Department of the University of Illinois in 1896 and from the University of Illinois Medical School in 1903, served his internship at St. Mary of Nazareth Hospital in Chicago from 1903 to 1905. He took postgraduate courses in eastern hospitals and the Mayo Clinic and from 1905 to 1925 was associated with Dr. A. J. Ochsner. Dr. Xelowski was chief surgeon at the Woman's Hospital in Chicago from 1915 to 1921 and had been a member of the staff of St. Mary of Nazareth Hospital from 1905 until the time of his death. His practice was devoted largely to general surgery, with special consideration given to gynecology.

Dr. Xelowski was a member of the following medical and surgical societies: the American Medical Association, the Chicago Medical Association, the Illinois State Medical Association, the Chicago Pathological Association, the Polish Medical Association of Chicago, the American College of Surgeons and the International College of Surgeons.

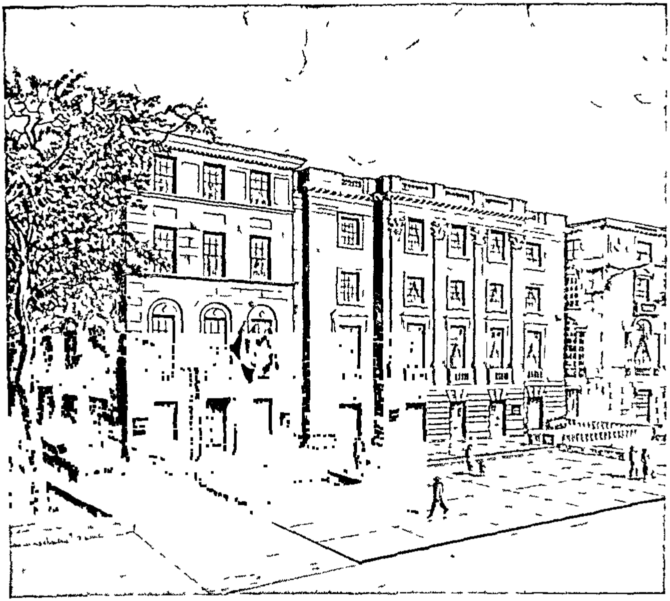
HENRY C. DOMS

M.D., A.I.C.S.

After a long illness, Dr. Henry C. Doms of Slayton, Minnesota, died of heart disease in September 1951 at the age of 71. He was educated in the Pipestone county schools and graduated from high school at Pipestone. Dr. Doms received his medical degree from Kansas City Medical School, Kansas City, Missouri, in 1905.

Immediately upon receiving his degree, Dr. Doms entered practice in Holland, Minnesota. After seven years he moved to Slayton, Minnesota, where he established and operated the Home hospital and took an active part in civic affairs. His postgraduate work was done at the University of Minnesota, and he also taught at a nurses' training school.

During his lifetime, Dr. Doms was president of the Slayton Civic and Commerce Association, the Southwestern Minnesota Medical Association, and the Murray County Public Health Association. He was a member of the American Medical Association and of the International College of Surgeons.



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Vol. XVI NOVEMBER, 1951 No. 5

Portrait of a Gentleman

IN MEMORY OF HERBERT ACUFF, M D, F A C S, F I C S

IT IS with heartbreaking sorrow and a sense of universal as well as personal loss that we record the passing of our beloved friend, colleague and President, Dr. Herbert Acuff of Knoxville, Tennessee, who died quickly and mercifully of a heart attack on Friday, the second of November (see obituary page)

That hearts are heavy all over the civilized world is touchingly evident from the flood of letters, telegrams and cables still pouring in. The flag of the International College of Surgeons hangs at half-mast on the College Home, and on the portal a wreath of mourning bay The portrait of our friend and leader looks down from a shadow of crape, unchanged in its kindliness but poignant indeed to see.

These things, in their way, are tributes, the signals of grief But no expression of our grief and shock can be adequate. Perhaps we should do better to express our gratitude—gratitude for the great privilege of having known him and walked a little way with him. For it was a privilege. In a world stained deep with hostility and fear, with jealousy and spite, with self-interest and self-aggrandizement and cruelty and indifference, Dr. Acuff lived his life on a loftier plane; not consciously, not self-righteously, but naturally. He chose the good and rejected the bad by instinct. Like all such men, he leaves the world better than he found it.

We admired and honored him for his worth-while achievements, but we loved him for his unfailing courage, kindness and truth. He exemplified to us the "great good man" at his best; for what is a good man but one who lives for others, and what is a great man but one who is incapable of petty thought or action?

No meeting with Herbert Acuff could be casual. An almost startled admiration and affection leapt into being at his first approach, to be sealed forever in the recipient's memory by the warmth, sincerity and spontaneity of his greeting and his handclasp. His reward for the high integrity of his life and work was a countenance so winning, a manner so genuinely friendly and a dignity so unassailable that none who looked upon him can ever forget him. Sham dignities there are, and undeserved, but the dignity of this man was in his manhood, had its foundation in humility, and could no more be shaken by the flurries and storms of circumstance than can the Rock of Gibraltar.

No stress or strain disturbed his sense of values; the waves of cynicism and sophistry broke harmlessly against him. He knew that loyalty is more than a sentiment, that friendship can be worthy of the name, and that gentleness and cour-

Dr. Herbert Acuff, F.A.C.S., F.I.C.S.

1886 1951

President, United States Chapter, 1945-1948
President, International College of Surgeons, 1950-1951

tesy betoken not weakness but strength His sense of humor and his sense of proportion never failed him He never descended to barter, when he gave of himself, as he did every day of his life, he gave freely, warmly and without calculation or pause

An obstacle he regarded as something to look beyond, as long as the goal was in sight, it could be reached His faith in mankind was tremendous He seldom spoke of it, but he had no need to It was so strong a factor in his personality that his very presence was a challenge Men and women confronted with this unassuming but impressive exponent of all the higher human potentialities reexamined themselves and profited greatly thereby It is no small testimony to Dr Acuff's charm that none of them resented the reminder

Of the loss to the International College of Surgeons who can speak without faltering? Dr Acuff had friends and admirers all over the world A member of the College from its incipiency, he accepted the duties of membership as binding He was never once found wanting, never half-hearted His dedication to the College ideals was complete Staunchly and steadily he supported the organization throughout the early viscissitudes every such group encounters No less staunchly and steadily he participated actively in all its endeavors throughout the years of its struggle and growth When the College accorded him the highest honor in its gift, the international presidency, he assumed and discharged the office quietly and well There was no ostentation in him, no self-seeking His whole career, personal, professional and organizational, was a living pattern of the principles on which the College was founded We may take sorrowful comfort from our knowledge that his devotion was matched and compensated in his lifetime by the almost miraculous growth of the organization he served so faithfully

Let us give thanks, then, out of our bitter grief His season of mourning may well be the rest of our lives, but he did not labor in order that we might mourn He labored that men might grow to a man's true stature, that knowledge and truth might reach the uttermost dark corners of the earth, that peace and amity and human brotherhood might prevail He did as much as any man can to achieve it Of how many others can this be truly said?

He was our friend, and we shall not forget him He was our brother, and we cannot but grieve We shall grieve anew at every reminder of him, at every rich memory of the man he was We shall miss him—how deeply and how painfully each of us knows But our true tribute to him goes much further We must take strength from the record of strength he bequeathed us, and learn of him now, if we have not learned before, what majesty may shine through simple, sincere devotion, what changes can be wrought in man by faith in man's honor, what spiritual heights await the self-forgetful, and how better than bread is the friendship of a true friend

MAX THOREK

His life was gentle, and the elements
So mixed in him that Nature might stand up
And say to all the world, This was a man!
—Shakespeare

Original Articles

Cervical Ribs: Symptoms, Differential Diagnosis and Indications for Section of the Insertion of the Scalenus Anticus Muscle

ALFRED W. ADSON, M.D., F.A.C.S., F.I.C.S. (HON.)†
ROCHESTER, MINNESOTA

THE symptoms produced by the presence of cervical ribs result from pressure on and irritation of the subclavian artery and the brachial plexus. The mere presence of cervical ribs,[1] whether unilateral or bilateral, does not necessarily mean that they are responsible for pains in the shoulder or arm. The factors responsible for lessening the width and the depth of the posterior cervical triangle determine whether or not pressure is produced on the subclavian artery and the brachial plexus. In some instances, when cervical ribs are absent, symptoms appear similar to those produced by their presence. This phenomenon, with the accompanying group of symptoms, is referred to as the scalenus anticus syndrome.

Section of the scalenus anticus muscle (which I suggested and reported on in 1927) instead of removal of the supernumerary rib continues to be the operation of choice. Occasionally, in addition to scalenotomy, a portion of a completely formed cervical rib must be cut away with rongeurs in order to obtain thorough mobilization and decompress the brachial plexus. Cervicothoracic sympathectomy occasionally has to be perforced in conjunction with scalenotomy when vascular and vasomotor symptoms predominate. An anomalous formation of the first thoracic rib, with the presence of a cervical rib, requires resection to liberate the brachial plexus thoroughly.

Development of Supernumerary Ribs.—Jones attributed the embryologic formation of supernumerary ribs to a conflict between forming plexuses and ribs. In the higher forms of animal life, the limb buds cover several vertebral segments, the nerves from which grow into the buds. However, the diametric growth of the limb buds does not keep pace with the longitudinal growth of the vertebral column, and soon segmental nerves have to pursue an oblique course to enter the buds. Then begins the conflict between the obliquely running nerves and the newly forming ribs. The embryonic nerve trunks are far larger in proportion to the vertebrae and ribs in the embryo than in the fully developed animal. The obliquely running nerves normally impede the growth of the ribs, so discouraging them that they merely form vertebral processes. Todd was of the opinion that the vessels have equal importance with the nerves as causative factors in modification of the upper end of the thorax.

The reported anomalies of the upper end of the thorax range from rudimentary first ribs to double cervical ribs on the same side.

Gruber, in 1869, classified cervical ribs. He divided them into four groups according to extent of growth: (1) a rib of slight

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†Deceased.

Read at the Sixteenth Annual Assembly of the United States Chapter, International College of Surgeons, Chicago, Sept. 11, 1951.
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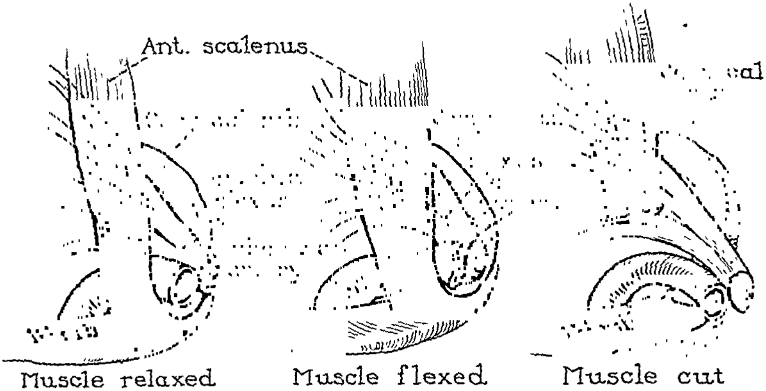

Fig. 1.—Process of compression of the subclavian artery and the brachial plexus against the cervical rib with the release that is effected by dividing the muscle at its attachment. The subclavian artery may be partially compressed at all times in the presence of a cervical rib but is frequently occluded by contracture of the scalenus anticus muscle on inspiration.

degree, reaching beyond the transverse process; (2) a more advanced rib, reaching beyond the transverse process, either with a free end or touching the first rib; (3) an almost complete rib, the connection with the cartilage of the first rib being formed by means of a distinct band or by the end of the long body of the cervical rib; and (4) a complete rib, possessed of a true cartilage which unites with the cartilage of the first thoracic rib.

Todd expressed the opinion that the scalenus and intercostal muscles arise from the same muscle plane, forming two sheets, the outer forming the scalenus anticus and minimus muscles; the inner, the scalenus medius and posticus muscles. These sheets of muscle are continued as the internal and external intercostal muscles. The subdivisions of the scalenus muscles are made by the passage of vessels and nerves. The course of the subclavian artery through the scalenus muscles corresponds to that of an intercostal artery through the wall of the thorax.

The subclavian artery is divided into three parts by the scalenus anticus muscle. The first part is medial to the muscle; the second part is directly behind, and the third part is lateral. The subclavian vein is below and in front of its artery, with the scalenus anticus muscle lying between. The phrenic nerve passes downward in front of the scalenus anticus muscle toward the medial border. The cervical pleura is directly below and behind the first and second parts of the subclavian artery. It extends higher in the neck in persons with cervical rib. An important relation to the first part of the subclavian artery on the left side is borne by the thoracic duct which arches down in front of it in order to end at the junction of the internal jugular and subclavian veins. The first thoracic rib is below the third part of the subclavian artery.

Incidence of Supernumerary Ribs.—Cervical ribs[1] are present in 6 patients per thousand; 55 per cent of these are discovered accidentally by the roentgenologist in routine examinations of the cervical portion of the spine for complaints other than those produced by cervical ribs. They occur twice as often in female as in male patients. They appear bilaterally in 50 per cent of the cases; when they are unilateral, they occur as often on one side as the other.[10, 15] However, when an unilateral cervical rib is present, there frequently exists on the opposite side a supernumerary costal tubercle which does not extend beyond the transverse process of the cervical vertebra and is, therefore, not classifiable as a cervical rib. White, quoting from Haven's study, stated that malformations of the first thoracic rib occur as often as do cervical ribs. In Henderson's experience, although malformations of the first thoracic rib were encountered, they were not observed as often as were cervical ribs.

Taut Omohyoid Muscle.—The omohyoid muscle in persons with long necks not infrequently compresses the brachial plexus and gives rise to pain and paresthesia. Although this muscle usually is divided during a scalenotomy, I have purposely left the ends unsutured during closure of the wound in several cases. I have done this after an experience with a patient who had undergone scalenotomy elsewhere but still complained of pain and paresthesia. This patient also had a small cervical rib. Since it was not certain that the scalenus anticus muscle had been completely divided, reoperation was advised. I found everything satisfactory except that the omohyoid muscle was very tense and acted as a band running diagonally across the brachial plexus. On section of the omohyoid muscle the wound was closed. The patient was promptly relieved of her symptoms.

Before proceeding with an enumeration of the symptoms produced by the factors responsible for the cervical rib or the scalenus anticus syndrome, I should like to offer a word of caution and suggest that clinicians and surgeons consider other causes for pain in the shoulders, arms, neck and hands. I agree with Ochsner and his associates and with Eaton and McGowan, who have emphasized that numerous conditions may produce pains in these areas. The more common ones are bursitis, cervical arthritis, myositis, fibrositis, brachial neuritis, Raynaud's disease, thrombo-angiitis, neoplasms within the spinal canal, neoplasms of the peripheral nerves and protruded intervertebral discs. In addition to all these there are functional elements, exemplified by the patient who complains of pain "here and there," which includes the shoulders, neck, head and even the arms at one time or another. I presume that it is needless to emphasize the importance of a careful study and an accurate differential diagnosis. It is certain that scalenotomy will not relieve the symptoms produced by the lesions just mentioned.

Symptoms.—Pain is the most common symptom. Often a pulsating mass can be detected above the clavicle; a bruit may be elicited in the same area. Paresthesia and anesthesia are not uncommon. Paralysis occurs less frequently, as does gangrene of the fingertips. Symptoms of vasomotor disturbances appear rather frequently. One hand is cooler, more sweaty and more dusky than the other hand when the condition is unilateral.

The pain may be sharp and lancinating, or it may be a dull ache. It usually courses downward over the ulnar and median nerves but occasionally extends upward to the shoulder and into the neck. It may be more or less continuous, but invariably it is exaggerated by rotation of the patient's head or a forceful downward pull of the shoulder. The patient with cervical ribs that actually give rise to symptoms usually complains of pain on any sudden or violent exertion. Housewives complain of shoulder and arm pain after sweeping, washing or dusting. One woman complained of pain and numbness along the distribution of the ulnar nerve after difficult labor. A physician complained of severe pain that extended along the median and ulnar nerves after he had struggled with an insane patient. Hyperesthesia, paresthesia and anesthesia may be associated with the pains and may persist after strenuous activity. Atrophy of the muscles supplied by the brachial plexus occurs infrequently; when it does occur, it is manifested late in the course of the disease and is rarely complete The muscles supplied by the ulnar nerve are the ones chiefly affected

Vascular symptoms may be divided into three groups The first is that which results from changes in blood flow, the blood flow being altered by varying degrees of constriction of the subclavian artery The constriction results from compression of the artery by the scalenus anticus muscle against the plexus and cervical rib (*Fig* 1) *Patients complain of not being* able to work with their hands raised above their shoulders, drive a car, or lift a heavy object because of pain and paresthesia, or of not being able to sleep on the side because of resulting numbness in the arm and hand

Vascular symptoms of the second group are caused by actual organic changes in the subclavian artery and its terminal branches, characterized by occlusion of the radial, ulnar and brachial arteries, and the appearance of edema, cyanosis and gangrene of one or more fingers Atheromatous patches have been observed in the wall of the subclavian artery posterior to the scalenus anticus muscle Fusiform aneurysms have also appeared in the subclavian artery lateral to the scalenus anticus muscle

The third group of vascular symptoms is caused by disturbances of the sympathetic nervous system, characterized by *vasomotor changes not unlike those observed* in cases of Raynaud's disease The skin covering the hand is more likely to remain cool, dusky and moist than to pass through color changes such as occur in Raynaud's disease Horner's syndrome on the affected side has been observed many times

The scalenus anticus syndrome, without the presence of a cervical rib, has been established as an independent entity Naffziger and Grant, Ochsner, Gage and

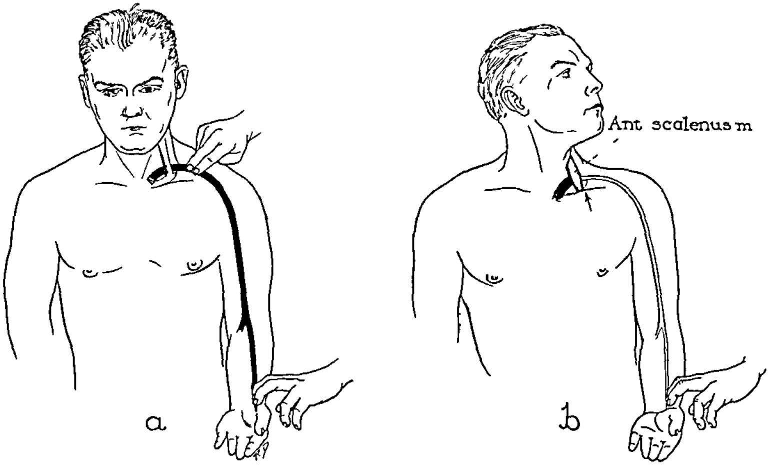

Fig 2—The vascular test *a* the subclavian and radial arteries identified *b*, pulsations of arteries obliterated by inspiration elevation of patient s chest and rotation of his head to the affected side (in this case the left) [From Adson, A W , Surgical Treatment for Symptoms Produced by Cervical Ribs and the Scalenus Anticus Muscle, Surg , Gynec & Obst 85 687 700 (Dec.) 1947]

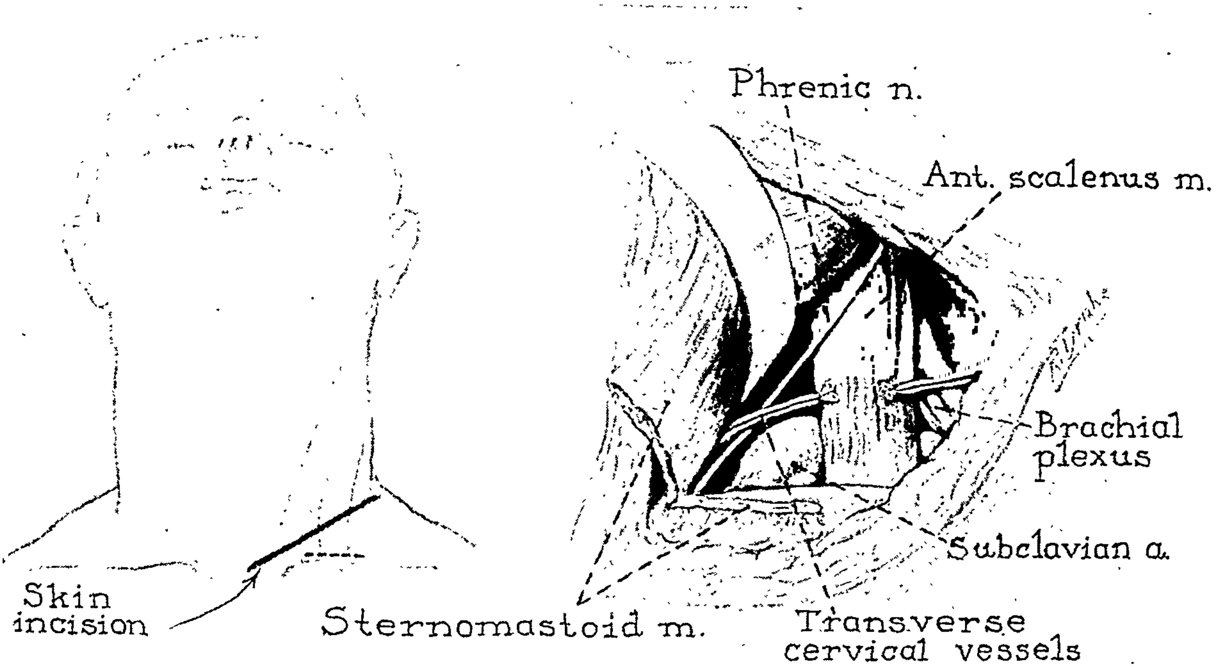

Fig. 3.—The operative incision and the anatomic structures in the posterior triangle of the neck. [From Adson, A. W.: Surgical Treatment for Symptoms Produced by Cervical Ribs and the Scalenus Anticus Muscle, Surg., Gynec. & Obst. 85:687-700 (Dec. 1947.]

DeBakey, Jelsma, Love and others have ably described the syndrome and have supported their opinions by reports of cases. The only addition I can make is to emphasize the importance of an accurate diagnosis if relief is to be expected from scalenotomy.

Etiologic Factors.—The first factor is that those persons in whom symptoms develop have an anatomic structure of the neck that is different from the cervical structure of normal persons. The cervical portion of the spinal column is longer, and this same congenital defect accounts for the high-lying position of the subclavian artery. The width of the base of the posterior cervical triangle and the distance between the posterior surfaces of the scalenus anticus and scalenus medius and posticus muscles are congenitally shorter, or perhaps one should say lower, so that the space through which the subclavian artery and the cords of the brachial plexus must pass is decreased. Then, if a cervical rib or a large cervical transverse vertebral process is present, the structures passing through the base of the triangle are still further compressed, since the bony structures elevate the floor and displace the plexus forward against the subclavian artery. The subclavian artery is unable to dislodge itself and, therefore, is caught, compressed and irritated between the brachial plexus from behind and the scalenus anticus in front. When symptoms are present, the insertion of the scalenus anticus muscle invariably is wide, the muscle being attached laterally beyond the tubercle of the first thoracic rib. This narrows the space between the lateral border of the scalenus anticus muscle and the cervical rib, and accounts for additional compression of the brachial plexus and the subclavian artery.

The second factor, which is concerned more with the onset of symptoms, probably is associated with the descent of the shoulder girdle. This process begins in early adult life. The descent or sagging of the shoulders possibly may add sufficient traction on the brachial cords to precipitate symptoms when congenital abnormality of the lower part of the neck has already reduced the normal freedom of movement.

The third factor is the presence of a hypertrophic scalenus anticus muscle. My attention was called to the possible role the scalenus anticus muscle played in the cervical rib syndrome on June 13, 1925, when I was asked to examine a patient who had gangrene of the first and second fingers of the right hand. It was known that he had a cervical rib on the right side, but we were unable to explain the unilateral vascular changes in the fingers. The brachial, radial and ulnar arteries had no pulsations. The right hand and the lower part of the arm were cyanotic, cold and moist. In view of my interest in vasomotor disturbances, I advised surgical exploration of the cervical rib. This was done. I used the anterior approach that I still use—the one in which the base of the posterior cervical triangle is explored through a unilateral collar-skin incision. After reflecting the clavicular portion of the sternocleidomastoid muscle, I exposed the scalenus anticus muscle. The muscle was in my way as I explored the cervical rib, so I proceeded to section the costal attachment. I noticed that with each inspiration of the patient the scalenus anticus muscle bulged, became tense and completely collapsed the subclavian artery. After I had divided the muscle there remained an indentation in the subclavian artery where the muscle had rubbed the artery. This indented portion of the artery was shell-like to palpation, for a calcareous atheroma had developed there. The vessel did not give way (rupture,) at the site of this atheroma, as it did in the 2 other cases. When the artery was released from the pressure of the muscle it began to slip downward under the clavicle, and as it did so it released the brachial plexus. Hence, the brachial plexus no longer was jammed over against the cervical rib. It was apparent that removal of the cervical rib would not have been sufficient to relieve the constriction of the subclavian artery as long as the scalenus anticus muscle remained attached to the first thoracic rib. It was apparent likewise that sectioning of the scalenus anticus muscle at its insertion resulted in an upward retraction of the muscle, which relieved the situation without the necessity of removal of the cervical rib.

After having several similar experiences, I became convinced that it was not necessary to remove cervical ribs routinely. This point was further substantiated by experience with the vascular test. During the operation I could increase the tension on the scalenus anticus muscle by having the anesthetist elevate the patient's chin and rotate the head to the affected side. The increased tension increased the pressure and further collapsed the subclavian artery with each inspiration. It was also observed in preoperative employment of the test that the more completely the circulation was obliterated at the wrist, the greater was the evidence of arterial compression when the subclavian artery was exposed during the operative procedure.

The Vascular Test.—I should like to reemphasize the importance of the *vascular test* (Fig. 2), since, if the result is positive, it serves as a strong indication that a scalenotomy is indicated. The test indicates whether or not the volume of the pulse has been altered, suggesting that the subclavian artery has or has not been compressed. If the subclavian artery has been compressed, there is a strong probability that the brachial plexus also is irritated or compressed whenever the scalenus anticus muscle is placed on tension, since the artery is being displaced posteriorly against trunks of the plexus.

The test consists of having the patient take a long breath, elevate his chin and turn it to the affected side. This is done as the patient is seated upright, with his arms resting on his knees. An alteration or obliteration of the radial pulse or change in blood pressure is a pathognomonic sign of the presence of a cervical rib or the scalenus anticus syndrome. Since I called attention to this phenomenon in 1927, it has been too often overlooked in a surgeon's desire to operate for pain in the shoulder and arm supposedly due to either syndrome.

It has been my experience that little has been accomplished by scalenotomy unless the vascular test gives a positive result. The test for muscle tenderness and nerve block advocated by Ochsner, Gage, and DeBakey apparently has proved valuable in the selection of patients for operation when a scalenus anticus syndrome is considered, but in my opinion it is not as reliable as the vascular test when used as a surgical indication.

The vascular test has other diagnostic values, such as determination of the presence or absence of subclavian arterial constriction when cervical ribs are identified roentgenologically by accident. If the result of the test is negative, scalenotomy is not indicated and the patient should not be told of the finding. If the result of the test is positive, operation should be considered then or later, depending on how much constriction has taken place. If the radial pulse can be obliterated, there is evidence of trauma to the subclavian artery, and scalenotomy should be performed at once, since on several occasions I have observed atheromatous thickening in the wall of the subclavian artery under the scalenus muscle where friction existed. In 2 patients of mine the artery ruptured at the site of the atheromatous patch after scalenotomy. In 1 patient, rupture occurred twelve days after operation. The hemorrhage was so extensive that the patient died before I could bring him back to the operating room and ligate the subclavian artery. In the second case it occurred just as I had finished the operation. I promptly exposed and ligated the proximal end of the artery. The entire wall of the vessel was brittle in that portion of the subclavian artery that lies posterior to the scalenus anticus muscle. Fortunately, the patient recovered without complications and was also relieved of symptoms.

We still have failed to explain why the scalenus anticus muscle becomes hypertrophied in so many cases. It is possible that the muscle, with other accessory respiratory muscles, is called on to lift a heavier load during respiration in adult persons than in children because the shoulders and the pectoral girdle have increased in weight. The descent of the pectoral girdle in adult life may also have increased the burden of the scalenus anticus muscle on inspiration.

It is my opinion that the scalenus anticus syndrome, which develops with or without cervical ribs, results from a combination of factors. First, the congenital anomaly restricts the activity and freedom of movement of the brachial plexus and the subclavian artery. As long as no activating factor is introduced, the artery may be compressed slightly with each inspiration without the production of symptoms. But as the load on the scalenus anticus muscle is increased, the artery is compressed and displaced backward, jamming the plexus against the floor of the posterior triangle, the cervical rib, or the transverse process of the cervical vertebra. All this varies in degree, depending on the room within the base of the posterior triangle of the neck. The neurologic symptoms depend on the nerve trunk involved and the degree of pressure applied. The atheromatous changes of the subclavian artery, with resulting thrombosis and occlusion, no doubt are due to damage from local trauma and a liberated embolus. The degree of damage bears a direct relation to the trauma. The presence of adhesions about the subclavian artery suggests thrombosis of the vasa vasorum and an inflammatory reaction. The tenderness of the scalenus anticus muscle pointed out by Gage probably is caused by thrombosis of arterioles from pressure trauma within the muscle. It undoubtedly gives rise to a local inflammatory process and sensations of pain, which Gage said he could temporarily relieve with a local anesthetic agent.

The vasomotor phenomenon results from stimulation of the postganglionic

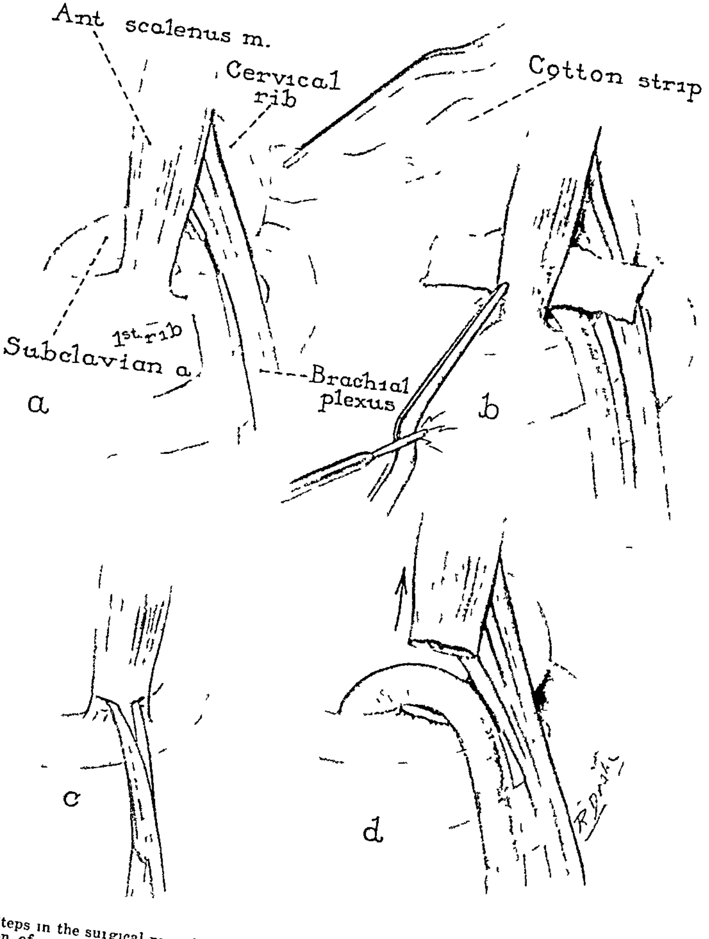

Fig 4—Steps in the surgical procedure and in protection of the subclavian artery during operation, *a*, insertion of a strip of cotton between the subclavian artery and the scalenus anticus muscle, *b* use of electrocoagulation to control bleeding while the tendinous muscular attachment of the scalenus anticus muscle is being sectioned, *c*, sectioning of the musculotendinous insertion of the scalenus anticus muscle with scissors; *d*, sketch showing how, when the scalenus anticus muscle has been sectioned, the subclavian artery slides forward and assumes normal caliber, and the lower trunk of the brachial plexus likewise slides forward and downward [From Adson, A. W.: Surgical Treatment for Symptoms Produced by Cervical Ribs and the Scalenus Anticus Muscle, Surg, Gynec. & Obst 85 687-700 (Dec) 1947]

sympathetic fibers as they pass, intermingled with the myelinated nerve fibers of the brachial trunks. In patients who present an unusual vasomotor disturbance the sympathetic nerve distribution probably is as Telford and Stopford suggested. In reviewing a number of dissecting-room subjects without cervical ribs, they observed that the lower trunk of the brachial plexus in 8 cadavers lay on the upper surface of the first rib. In the eighth cadaver then observed that in the inferior part of the lower trunk of the brachial plexus there was a distinct and separate bunch of unmyelinated fibers. Their interpretation was that these were sympathetic fibers passing to the upper limb by the way of the lower trunk, fibers that had not yet become incorporated with and intermingled among the other fibers of the lower trunk. The fusion of the sympathetic fibers with the lower trunk was, in this instance, at a more distal point than usual. It is my impression that a similar situation occurs now and then when cervical ribs are present, because the vasomotor symptoms of vasospasm and hyperhidrosis predominate and are out of proportion to other neurologic observations, so that major involvement of postganglionic sympathetic fibers is suggested.

Surgical Treatment.—A collar incision (Fig. 3) is made for a distance of about 5 cm., extending upward and backward from the sternoclavicular articulation over the posterior triangle. The dissection is carried through the platysma myoides muscle and fat until the tendon of the sternocleido-mastoid muscle, with its attachment to the clavicle, is exposed. The clavicular attachment is divided between two forceps. The muscle portion is then reflected mesially, so that the tendon of the omohyoid is exposed and divided. During dissection, the transverse cervical and the suprascapular arteries are divided and ligated. The scalenus anticus muscle is dissected free, and the phrenic nerve is retracted mesially before the tendinous and muscular insertion is divided. The subclavian artery will appear on the lateral side of the scalenus anticus muscle and, if the space between the cervical rib (or the cervical rib and the tendinous bands to the thoracic rib) and the lateral border of the scalenus anticus muscle is narrow, the surgeon immediately observes compression of the subclavian artery against the trunks of the brachial plexus. On the mesial side of the scalenus anticus muscle the pleura may be observed, and if dissection is carried still farther mesially the carotid sheath and the vertebral artery will be exposed; this, however, is unnecessary.

It is important to carry the dissection upward on the anterior surface of the scalenus anticus muscle for a distance of 5 cm. in order to expose the phrenic nerve thoroughly before it is retracted mesially. The surgeon must bear in mind, before he divides the scalenus anticus muscle at its insertion, that it lies over the compressed portion of the subclavian artery, and that the pleura is situated mesially to the inner border of the muscle; he will thus avoid injury to both structures. Sectioning of the musculotendinous insertion is most easily accomplished by sectioning the fibers in small groups with scissors. The cut fibers promptly retract upward (Fig. 4). As soon as the scalenus anticus muscle has been divided, the subclavian artery will be seen to slide downward and take on its normal caliber, and the lower trunk of the brachial plexus likewise will slide forward and downward. If there are adhesions between the artery and the brachial plexus, gentle dissection will be necessary to liberate both. Care is required to avoid injury to the vasa vasorum; if they are injured, extravasation of blood will take place between the muscular and adventitious coats of the subclavian artery.

Before the surgeon proceeds with sectioning of the bundles of muscle fibers of the scalenus muscle, it is advisable to separate the muscle from the subclavian artery and protect it during the operation by slip-

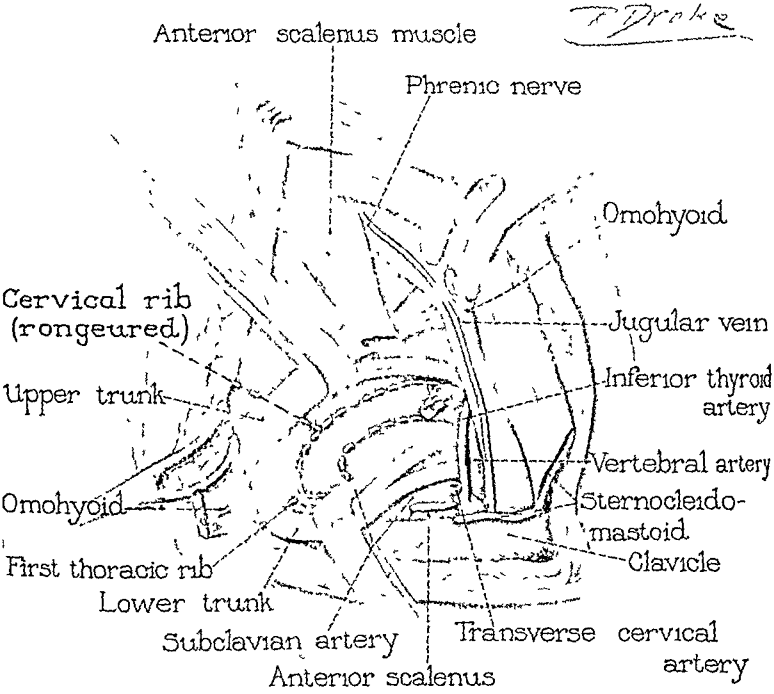

Fig. 5—Anterior approach to the cervical rib when resection becomes necessary

ping a strip of cotton between the two. This will permit the surgeon to use the electro-coagulating current to control the bleeding while he is sectioning the tendinous muscular attachment of the scalenus anticus muscle. If the muscle is hypertrophied and bulky, it is advisable to resect 3 to 5 cm. off the lower free end. The incision should be made diagonally across the muscle to avoid a postoperative lump in the neck

Craig and his assistant[1] in 1937 emphasized the necessity of resection of a portion of the cervical rib, in addition to the performance of scalenotomy. Partial removal of the cervical rib is indicated when the rib is completely formed and occupies a high position as it turns downward, compelling the lower trunk of the brachial plexus to ride up over it before it continues its course (Fig. 5). I remove this portion with a rongeur, exposing the amount I wish to remove by retracting gently the lower trunk of the plexus downward and the middle trunk upward. If it is necessary to operate on both sides, I do not hesitate to do so during the same operation, and I have not found any contraindications to such a procedure.

Before closing the wound, I reflect a flap of fat between the brachial plexus and the subclavian artery to minimize adhesions and scarring. The wound is closed in much the same manner as any operative wound is closed. The scalenus muscle retracts upward. If division of the omohyoid tendon has been necessary, it usually is reunited by suture before the clavicular portion of the sternocleidomastoid muscle is resutured with mattress sutures of chromic catgut. The patient may be permitted to sit up on the day after operation; he may be discharged from the hospital after three days and dismissed from the surgeon's care as soon as the cutaneous wound has healed.

When the technique of the anterior approach and division of the scalenus anticus muscle is compared with the former lateral approach and resection of a cervical rib, the advantages of the anterior approach are readily appreciated, to say nothing of the relative effectiveness of the procedure. The anterior approach can be carried out with ease and without danger of traumatizing the brachial plexus, whereas the latter requires considerable dissection and retraction of the brachial plexus.

REVIEW OF CASE HISTORIES OF PATIENTS FOR WHOM SCALENOTOMY HAS BEEN PERFORMED

The review includes the patients for whom scalenotomy has been performed at the Mayo Clinic from January of 1925 to August of 1951, by members of the neurosurgical staff. There are 169 patients in the series. They have been divided into three groups, A, B and C, for comparison of the incidence according to age, sex, sides involved, symptoms, types of operation and postoperative results.

Group A includes patients for whom scalenotomy was performed without resection of cervical ribs (75 patients). Group B includes patients for whom a scalenotomy and partial rib resection was performed (30 patients). Group C includes patients for whom scalenotomy was performed for the scalenus anticus syndrome in the absence of cervical ribs (74 patients).

Table 1 shows the incidence according to age when symptoms become so severe as to compel the patient to seek medical relief.

Table 2 indicates the incidence according to sex and the side involved. Female patients appear to be afflicted twice as often as male patients. One side appears to be involved as often as the other. Unilateral symptoms appear twice as often as do bilateral symptoms.

Table 3 shows the relative frequency of symptoms produced by cervical ribs or by the scalenus anticus syndrome. In some instances only one symptom was present; in others there were several.

In Table 4 an attempt is made to evaluate the postoperative results. The majority of the patients in Groups A and B showed excellent results. In about a third the results were good, with smaller groups showing poor results or none.

In review of the table concerned with results (Table 4), it is apparent that the results in Group C, which includes those patients for whom scalenotomy was performed in the absence of a cervical rib, were not so satisfactory as the results obtained in Groups A and B. Slightly more than a third of the patients in Group C were relieved of their symptoms; many were improved by surgical treatment, whereas for others the treatment accomplished little or nothing. The probable reason for this was too liberal selection of patients for surgical treatment and disregard of the vascular test. Too often the neurosurgeon has been prevailed on to do something when other measures have failed. Perhaps the physician interested in psychosomatic therapy should be called more often in consultation in this particular group of patients. The surgical results bear a direct relation to the anatomicopathologic picture.

Surgical Observations: In all cases in which the result of the vascular test was

TABLE 1—*Age of Patients at Onset of Symptoms of Cervical Rib or the Scalenus Anticus Syndrome*

Age Yr *	Group A	Group B	Group C	Total
10-19	4	2	0	6
20-29	15	12	7	34
30-39	26	8	20	54
40-49	17	5	15	37
50-59	13	3	7	23
60-69			1	1
Total	75	30	50†	155†

*Youngest, 14 oldest 63

† The age of the patient at the time of onset of symptoms could not be learned in all cases from the case histories

TABLE 2—*Sex and Side Involved of 169 Patients* With Symptoms of Cervical Rib or the Scalenus Anticus Syndrome*

	Group						
	A		B		C		
Data	M	F	M	F	M	F	Total
Patients	22	53	6	24	29	35	169
Right side	4	17	2	8	7	11	49
Left side	11	13	3	9	13	12	61
Both sides	7	23	1	7	9	12	59

* 57 male and 112 female patients

TABLE 3—*Occurrence of Symptoms in 169 Cases*

Symptoms	Per Cent of Total
Pain	94
Paresthesia	68
Sensory or motor loss	19
Vascular disturbance	37

TABLE 4—*Results of Surgical Treatment of 169 Patients With Symptoms of Cervical Ribs or the Scalenus Anticus Syndrome*

	Per Cent of Group		
	A*	B	C
Relief of symptoms ..	60	56	35
Great improvement	30	25	48
Slight improvement	10	15	5
Failure		3	12
Death (1 case)		0 6†	

* 75 patients in Group A, 30 in Group B, 64 in Group C.

† Per cent of 169 cases

positive, the scalenus anticus muscle produced a compression of the subclavian artery on each inspiration. Atheromatous plaques with deformities of the subclavian artery were present in 8 cases. In 2 cases the vessel gave way at the sites of these plaques and rupture occurred, as has been reported already. One of these patients succumbed before ligation of the first division of the subclavian artery could be effected; the other recovered without complications. Many patients had a fusiform enlargement of the subclavian artery in its third portion lateral to the scalenus anticus muscle, but only 4 patients had an aneurysm. Four patients had anomalous high-arched first thoracic ribs.

The surgical results were both satisfactory and disappointing (Table 4). In Groups A and B, approximately 60 per cent of the patients were relieved of all their symptoms. Approximately a third were greatly improved. They were able to return to their vocations and to carry on, but were annoyed by twinges of pain during certain movements. These recurrent symptoms were in all probability caused by adhesions in the surgical wound. Results of secondary surgical exploration verified this opinion. One patient was not relieved by scalenotomy but secured complete relief after a secondary operation in which the omohyoid muscle was divided and flaps of living fat were used to cover the trunks of the brachial plexus. In 9 other patients the omohyoid muscle was divided at the time scalenotomy was performed. For 6 patients unilateral cervicothoracic sympathectomy was performed in conjunction with scalenotomy.

CONCLUSIONS

1. The presence of cervical ribs without symptoms is not an indication for surgical intervention.
2. Pain associated with positive neurologic and autonomic vasomotor disturbances suggests compression of the subclavian artery and brachial plexus and is a positive operative indication.
3. A positive result from the *vascular compression test,* even in the absence of neurologic abnormalities, is an indication for surgical treatment.
4. Scalenotomy does not relieve vague pains in the arm and shoulder when such pains are due to other causes than compression of the subclavian artery and the brachial plexus.
5. Section of the omohyoid muscle is also indicated for patients in whom it constricts or irritates the brachial plexus.

RÉSUMÉ ET CONCLUSIONS

1. Laprésence de côtes cervicales sans symptômes n'est pas une indication opératoire.
2. La douleur et des signes positifs neurologiques et des troubles eu système autonome vasomoteur nous laisse penser à une compression de l'artère sousclavière et du plexus brachial. C'est une indication opératoire.
3. Même en l'absence de signes neurologiques positifs, un test de compression vasculaire positif est une indication opératoire.
4. La scalènotomie ne soulage pas la douleur vague dans l'épaule et le bras dûe à d'autres causes que la compression de la sous-clavière et du plexus brachial.
5. La section du muscle omohyoidien est indiquée si ce muscle comprime ou irrite le plexus brachial.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

1. Das blosse Vorhandensein von Halsrippen ohne Symptome stellt keine Indikation zum chirurgischen Eingriff dar.
2. Das Bestehen von Schmerzen in Verbindung mit Stoerungen des peripheren Nervensystems und der autonomen Vasomotoren laesst vermuten, dass Druck auf die A. subclavia und auf den Brachialplexus ausgeuebt wird und stellt eine Indikation zur Operation dar.
3. Ein positiver Ausfall des *Gefaessdruckversuches* bildet auch beim Fehlen positiver neurologischer Befunde eine Anzeige zur Operation.

4 Unbestimmte Schmerzen im Arm und in der Schulter, die durch andere Ursachen als Druck auf die A subclavia und den Brachialplexus hervorgerufen sind, werden durch die Scalenotomie nicht erleichtert

5 Wenn der M omohyoideus den Brachialplexus einschnuert oder reizt, ist die Durchschneidung auch dieses Muskels angezeigt

RESUMEN Y CONCLUSIONES

1 La presencia de costillas cervicales asintomáticas no constituye indicacion para intervención quirurgica

2 El dolor con trastornos neurologicos positivos y vasomotores autonomos sugiere compresion de la arteria subclavia y el plexo braquial y constituye indicacion operatoria

3 El resultado positivo de la prueba de compresion vascular constituye indicacion operatoria, aun en ausencia de datos neurologicos positivos

4 La escalenectomia no alivia el vago dolor del brazo y el hombro, debido a causas distintas de la compresión de la arteria subclavia y el plexo braquial

5 La sección del musculo omohiodeo se enc'uentra indicada tambien cuando dicho musculo comprime o irrita el plexo braquial

CONCLUSIONI RIASSUNTIVE

1 Una costola cervicale che non dia segni clinici non deve essere operata

2 Rappresentano indicazioni all'intervento il dolore e i disturbi neurologici e vasomotori, poiche indicano che vi e compressione dell'arteria succlavia e del plesso brachiale

3 Si considera indicazione all'intervanto la positivita del test della "compressione vascolare", anche in assenza di disturbi neurologici

4 La scalenotomia non puo avere effetto su dolori del braccio o della spalla che non siano dovuti a compressione della succlavia o del plesso

5 E' indicata la sezione del muscolo omoioideo quando esso comprime o irrita il plesso brachiale

SUMÁRIO E CONCLUSOES

1 A presença de costelas cervicais sem sintomas não e indicação para intervenção cirurgica

2 Dôr com perturbações neurologicas e autonomicas surgerem compressão da arteria sub-clavia e do plexo braquial e constitue indicação operatoria

3 Um resultado positivo de test de compressão vascular mesmo na ausencia de dados neurologicos positivos e uma indicação para operação

4 Escalenotomia não alivia dôres esparsas no braço e no ombro, as quais são devidas a outras causas alem da compressão da arteria subclavia e do plexo braquial

5 Secção do musculo omohyodêo tamben e indicada quando este musculo constringe ou irrita o plexo braquial

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Carcinoma of the Stomach

A Plea for Earlier Diagnosis and More Radical Treatment

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CARCINOMA of the stomach is associated with one of the lowest five-year post-therapeutic survival rates recorded for all types of cancer of the human body. This survival rate or so-called curability rate is discouragingly low because of two factors: first, late diagnosis in the majority of cases, and second, not sufficiently radical operation.

The only effective method of treatment available today is surgical extirpation. Complete removal of all cancer tissue is necessary if the survival rate is to improve. Recurrent malignant disease following operation for cancer of the stomach indicates that all cancer cells were not removed, either because the disease was too advanced to permit complete removal or because the necessity of radical resection was not recognized. Radical resection is essential in a large percentage of cases.

Early recognition of gastric carcinoma is dependent upon a number of factors. One of the most important is the physician's constant awareness of its frequency. When this single fact is recognized, a great advance toward diagnosis has been made. Symptoms have then to be evaluated and confirmed or disproved by readily available diagnostic methods. These methods include determination of the gastric contents; visualization of the stomach contour by roentgenologic or gastroscopic examination and, in some cases, exploratory laparotomy when the other diagnostic methods do not completely rule out malignant disease. When suggestive filling defects are observed in the stomach, surgical exploration should be employed to obviate the high mortality associated with long-unrecognized gastric carcinoma.

Cancer of the stomach is the most frequent type of malignant tumor and accounts for the highest death rate, 13.3 per cent of all deaths due to cancer (1948). This is true especially of gastric carcinoma in the male patient; 16.7 per cent of the men who die of cancer die of malignant disease of the stomach. In the male the sites of malignant tumor in order of frequency are (1) stomach, (2) bronchus and lung, (3) prostate and (4) intestine. In the female, malignant tumors arise most frequently in the following sites, in this order: breast, uterus, intestine and stomach (Tables 1 and 2).

TABLE 1.—*Total Number of Deaths from Cancer; U. S. Vital Statistics, 1948*

	Male Patients	Female Patients
Total deaths	97,944	99,098
Stomach	16,321 (16.7%)	9,894
Intestine	10,422	12,438
Bronchus and lung	12,891	3,440
Uterus		17,120
Breast		18,928
Prostate	11,758	

TABLE 2.—*Total Deaths in the United States, 1944, 1946, 1948; Relation to Cancer Deaths*

	1944	1946	1948
Total population, estimated		142,672,762	146,571,000
Total deaths from all causes	1,441,338	1,395,617	1,444,337
Deaths due to cancer and other malignant tumors	171,171	182,005	197,042
Deaths due to cancer of stomach	26,020 (15.2%)	25,625 (14.0%)	26,215 (13.3%)

Surgeons are not greatly impressed with the increase in cancer of the stomach from year to year. During the years 1944 to 1948 the total number of deaths from

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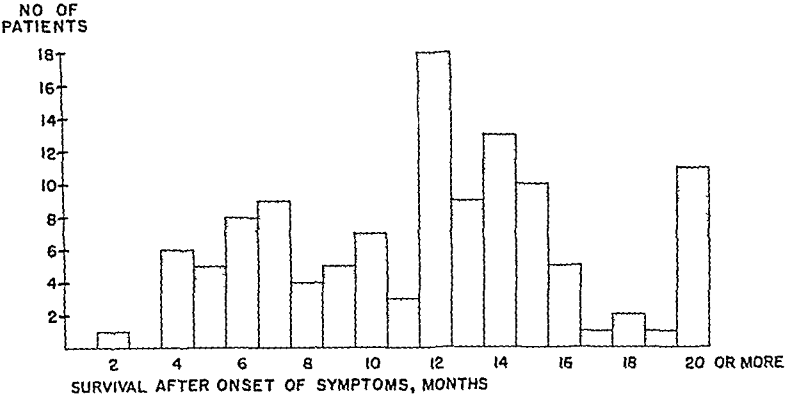

Chart showing survival periods for cancer patients subjected to exploratory operation and biopsy only. *Survival periods are reckoned in months from the time of onset of gastric distress.*

gastric cancer in this country remained remarkably constant and even showed a slight decrease in 1948, comprising 13.3 per cent of all deaths due to cancer (Table 2). Although the total number of deaths from this cause increased numerically in 1948, the total population also increased. The apparent increase in deaths due to carcinoma can be related to improved diagnosis, instruction of the public, more accurate reporting and the gradual increase in longevity. We now have a population of older persons, and this results in an increased incidence of carcinoma. The increased frequency observed among patients between the ages of 51 and 70 years, as noted in this study, is to be expected.

TABLE 3.—*Cancer of Stomach—Sex Distribution*

	Total Cases	Male Patients No.	Male Patients %	Female Patients No.	Female Patients %
Vital statistics of U. S. for 1948	26,215	16,321	62.2	9,894	37.8
Lahey Clinic statistics	1,329	851	64.0	478	36.0

TABLE 4.—*Carcinoma of Stomach—18,000 Cases (1931-1950)*

	No. of Cases	%
No operation	471	26.2
Operation	1329	73.8
Exploration only	519	28.8
Palliative operation	133	7.4
Resection	677	37.6

At the Lahey Clinic over a period of twenty years (1931-1950), a diagnosis of gastric malignant disease was made in approximately 1,800 cases, in 1,329 of which it was confirmed by operation (Table 4). Some form of resection was performed in only 37.6 per cent. Many of these operations were palliative but justifiable because they provided added comfort to patients who in many instances had foul, ulcerating, bleeding tumors that often produced gastric obstruction or anemia. Of the 1,329 patients with gastric malignant tumors, 64 per cent were men. This closely approximates the sex ratio published by the United States Bureau of Vital Statistics for the year 1948, 62.2 per cent of all deaths from gastric carcinoma occurred in male patients, and the male-female ratio was 1.8 to 1 (Table 3).

In our group of cases, 90 per cent of the patients who came to operation were past the age of 40. The age distribution in 300 cases is shown in Table 5, the highest rate of occurrence being noted among patients between 51 and 70.

No group of symptoms is particularly diagnostic of gastric cancer, but gastric distress should direct the physician's attention to the possibility of gastric neoplasms and, in most cases, should call for investigation by the various diagnostic methods at hand. A study of the earliest symptoms noted in 300 operative cases emphasized the importance of epigastric discomfort or pain (Table 6). In some patients the entire group of symptoms was present. In any case the presence of any one of these symptoms emphasized the need for thorough gastrointestinal study even though the symptom was not pathognomonic of the condition. Gastric distress is especially significant in men past the age of 50 and indicates gastric investigation, which should include roentgenologic examination of the stomach. Also, it is recognized that the diagnostic aid supplied by roentgenologic or gastroscopic examination is dependent upon the skill and experience of the roentgenologist and endoscopist.

TABLE 5.—*Cancer of Stomach: Age Distribution 300 Cases (Lahey Clinic)*

Age, Years*	No. of Cases
11-20	1
21-30	0
31-40	21
41-50	52
51-60	97
61-70	110
71-80	19
81-90	1

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*90 per cent of patients were over 40 years of age.

Table 6.—*Earliest Symptom Noted—300 Patients*

Epigastric pain or discomfort	170
Flatulence	34
Anorexia	29
Nausea or vomiting	24
Dysphagia	17
Anemia (pallor or weakness)	9
Weight loss	9
Bleeding (hematemesis or melena)	4
Abdominal mass	3
Diarrhea	1
Total	300

TABLE 7. — *Delay in Treatment (3 Months or More) in 300 Cases*

	Cases	
Delay due to		
Physician	93	
Patient	118	211
No delay (symptoms less than 3 months)		89
Total		300

The need for repeated roentgenologic examinations when gastric roentgenograms are normal and symptoms continue must be recognized. In many cases, such repeated studies provide the only means of arriving at a definite diagnosis. Two of the most discouraging features in the treatment of gastric cancer are delay in establishing the diagnosis and the patient's failure to seek medical aid in time, despite his symptoms. This delay, in many instances, is attributable to the physician as well as to the patient. In a group of 300 surgically treated patients, only 89 had had symptoms for three months or less, and 211 had had symptoms for three months to a year or more (Table 7).

In this group of 300 cases of proved gastric malignant disease, the delay of three months to a year or more was the responsibility of the physician in 93 (31 per cent) because of failure to make a diagnosis or because the diagnosis was mistaken. In this group of 93 patients, 44 had been treated for peptic ulcers over long periods, in many instances without roentgenologic confirmation (Table 8).

TABLE 8.—*Delay Due to Erroneous Diagnosis or No Diagnosis in 93 Cases*

No diagnosis	35
Peptic ulcer	44
Exploratory laparotomy	5
Anemia	3
Diabetes	1
Gallstones	1
Thyroid disease	1
Heart disease	1
Diaphragmatic hernia	1
Buerger's disease	1
Total	93

From a study of this group of cases, the need for greater vigilance with regard to digestive symptoms in patients past 50 years of age is obvious if these serious errors are to be avoided.

Determination of gastric acidity is of some significance, especially if free hydrochloric acid is not present. Anacidity should lead the physician to suspect malignant disease until it is definitely ruled out.

Particularly is this true if red blood cells are present in the gastric lavage The presence of free acid is no assurance of the absence of malignant disease of the stomach, in the group of 300 patients with proved cancer, 42 per cent had free hydrochloric acid levels of more than 20 units The physician should suspect carcinoma in patients with achlorhydria and in those with pernicious anemia and anacidity, and appropriate investigative studies should be instituted immediately

Detection of gastric malignant disease at an operable stage can be assured if all so called benign gastric tumors, polyps, leiomyomas, and especially the chronic recurring gastric ulcer or the gastric ulcer which fails to heal under a careful medical regimen, are brought to operation as soon as possible Jordan and Smith of this clinic in a study of 600 cases of gastric ulcer (operative and nonoperative) observed the incidence of malignant gastric ulcer was 9 8 per cent

In our experience, the incidence of malignant gastric ulcer in a group of 131 cases in which the preoperative diagnosis was benign ulcer was 19 6 per cent Therefore, it must be remembered that there is a possible 20 per cent chance that a gastric ulcer may be malignant Evidence has accumulated that adenomatous polyps have a great tendency toward malignant degeneration and should be removed surgically as soon as demonstrated on the roentgenogram Benign or atrophic gastritis, especially in the antral area, may possess malignant potentialities, often it cannot be distinguished from carcinoma by roentgenogram, and malignant disease must be suspected Shields Warren has called attention to the frequent association of chronic gastritis and carcinoma and has shown that the histologic changes associated with chronic gastritis are both exudative and epithelial When epithelial changes are marked they may be comparable to premalignant lesions noted elsewhere in the body

Treatment—The only treatment available at present for gastric cancer is surgical intervention, therefore, the possibility of reducing the great number of deaths from this type of cancer rests in earlier diagnosis, more surgical explorations of patients with proved cancer and more radical surgical removal of the tumor Surgical mortality rates have decreased, and resectability has gradually increased No patient with gastric carcinoma should be denied surgical exploration unless there is irrefutable evidence of extragastric spread—to Virchow's nodes, to the liver, or to the rectal shelf, where operation would be useless In the last ten years (1941 to 1951) the resectability rate for the operative group of 1,329 cases has been about 50 per cent, in spite of the fact that many more patients have undergone exploratory operations In this ten year period, 43 2 per cent were subjected to exploratory operations only, as compared to 27 7 per cent in the previous ten years (Table 9) At the same time, the mortality rate of gastric resection has dropped from 24 per cent (1931 to 1940) to 5 per cent (1946 to 1950) An appreciable mortality rate is associated with exploratory operations when definitive surgical treatment is not possible, but in view of the hopeless outlook in these cases, it is negligible as compared to the salvage rate of the cases in which resection was performed (Table 10)

TABLE 9—*Carcinoma of Stomach—Type of Procedure in 1 329 Operative Cases*

		Percentage		
	No of Cases	Resection	Palliative Operation	Exploration
1931 1950	1 329	50 9	10 0	39 0
1931 1940	357	54 6	17 7	27 7
1941 1950	972	49 6	7 2	43 2

TABLE 10—*Carcinoma of Stomach — Operative Mortality*

	Percentage		
	Exploration	Palliative Operation	Partial Resection
1931 1940	5	27	24
1941 1950	6 4	13	6 96
1946 1950	5 7	7	5

More radical surgical removal of gastric cancer holds the promise of a greater five-year survival rate and carries little increased risk In our last group of 90 cases in which total gastrectomy was done, there was an operative mortality of 7.7 per cent (7 deaths), which is comparable to the risk of partial gastrectomy (Table 11).

TABLE 11.—*Total Gastrectomy—Postoperative Mortality in 165 Cases*

	Patients	Postoperative Deaths	Per cent
1927-1943	75	26	34.6
1944-1951 (Sept. 1)	90	7	7.7
Total	165	33	

TABLE 12.—*Total Gastrectomy—Cause of Death in 165 Cases*

1944-1951 (Sept. 1) — 90 Patients — 7 Deaths		
Embolism		1
Peritonitis		3
Cardiovascular disease		3
1927-1943 — 75 Patients — 26 Deaths		
Cardiovascular disease		3
Embolism		1
Sepsis		22 (85%)
Mediastinitis	2	
Peritonitis	17	
Pneumonia	3	

The high operative mortality due to sepsis complicating both total and partial gastrectomies has almost been abolished. Radical operation is justified in view of the lowered operative risk and in the hope that the number of patients surviving five years or more will be increased. The number of exploratory operations should be increased, which would result in the performance of more resections.

Radical surgical removal is a necessity for many patients, because gastric carcinoma may spread by several means in addition to invasion of the regional lymph nodes of the stomach. Lahey and Marshall, in a report on total gastrectomy, emphasized diffuse lymphatic invasion through layers of the stomach, invasion of blood vessels and extension to the duodenum, in addition to metastasis to lymph nodes.

Complete surgical removal of all cancer tissue in many cases will necessitate total gastrectomy. Partial gastrectomy will be sufficient when the gastric cancer is well localized or when the lesion is in the antrum or the pylorus, but when it is diffuse and widespread or extends high along the lesser curvature, more radical surgical removal is required. In many cases this will mean total gastrectomy. In any type of operation the omentum should be removed, together with all lymphatic groups and also most of the supra-ampullary portion of the duodenum. Division of the costal margin, with the incision extended into the fifth or sixth interspace, often will facilitate the operation and permit a ready approach to the esophagus for resection and esophagojejunostomy. My associates and I have come to employ abdominothoracic incision more frequently for total gastrectomy and have found it distinctly advantageous. Also, transthoracic resection is valuable and necessary in a small percentage of cases and has been utilized in our group of 1,329 operative cases (Table 13).

TABLE 13.—*Carcinoma of Stomach—Operative Mortality in 84 Cases of Transthoracic Operation*

	Resection		Exploration	
	Cases	Mortality %	Cases	Mortality, %
1941-1950	53	28.3	31	6.4

Survival After Operation.—Gastrectomy, both partial and total, has resulted in a low five-year survival rate, but a greater percentage of patients may well be alive after five years if more radical operations are employed in a larger number of cases. This can be determined, however, only after a long experience with such radical procedures. If the spread of gastric cancer, as previously outlined, is completely removed by radical operation while the tumor is in the early stages of growth and not widespread, an increase in cures can be expected. Unfortunately, practically all total gastrectomies have been done only in those cases in which most of the stomach was involved; yet there is an appreciable five-year salvage rate. In our group of 127 patients treated by total gastrectomy, 21.9 per cent lived three years or longer and 12.5 per cent five years or longer. The five-year survival rate after partial gastrectomy in 300 cases has been 26.7 per cent. In this study we have made no effort to determine the effect of various types of pathologic change or of other factors upon the survival rate Our pathologists are not convinced that the grading of gastric cancer is of appreciable value, and this has not been done We hope to continue with a study of the larger group of cases and to report at a later date on other factors influencing survival

It is instructive to note the duration of survival of patients with cancer after palliative operation and after exploration and biopsy only Patients who underwent exploratory operation, with no definitive operation, lived an average of four and one half months after the exploration Patients treated by palliative operations lived from four to twelve months (average, five months) It is difficult to determine the life expectancy of the average patients with carcinoma of the stomach, as malignant disease must be present for some time before symptoms are first noted by the patient We have, however, studied a group of 120 patients treated by exploratory operation and biopsy only, and have charted the length of life after the patient first noted gastric distress (see illustration) The average length of life in this group after symptoms were first noted was approximately one year (12 2 months), the highest peak on the chart was twelve to fifteen months Eleven patients survived twenty months or more, and these 11 may well have had gastric ulcers that later became malignant

SUMMARY

Curability of cancer of the stomach is dependent upon early diagnosis and radical surgical removal

Surgical exploration is justified in a large majority of cases, in order that gastric resection may be performed in a higher percentage

The operative mortality rate for partial gastrectomy is 5 per cent, for total radical gastrectomy, 7 7 per cent

The five-year survival rate is still too low—26 7 per cent for partial and 12 5 per cent for total gastrectomy Most total gastrectomies were performed on patients with advanced gastric carcinoma

More radical gastrectomy offers increased hope of complete eradication of malignant disease of the stomach and is justified in view of the present operative mortality rates

RESUME

La curabilite du cancer de l'estomac depend de la precocite du diagnostic et d'une resection chirurgicale plus radicale que celle indiquee par les statistiques L'exploration chirurgicale est justifiee dans un grand nombre de cas, de t elle sorte que la gastrectomie soit faite dans un pourcentage plus eleve Le taux de mortalite pour une gastrectomie partielle est de 5%, pour la gastrectomie totale il est de 7 7% 26 7% des gestrectomies partielles vient plus de cinq ans aussi ce sont des pourcentages trop bas La plupart des gastrectomies totales furent appliquees a des cancers avances Une gastrectomie plus radicale offre un plus grand espoir d'eradication complete de la lesion maligne de l'estomac et est justifiee en presence des taux actuels de mortalite operatoire

RESUMEN

La curabilidad del cancer gastrico depende del diagnostico temprano ye la extirpacion quirurgica radical, segun indica la estadistica

Se justifica la exploracion quirurgica en la gran mayoria de los casos, a fin de que la reseccion gastrica pueda efectuarse en mayor porcentaje

El indice de mortalidad operatoria es de 5% para la gastrectomia parcial, de 7 7% para la gastrectomia radical total

El indice de supervivencia a los 5 años es aun bajo, 26 7% para la parcial y 12 5% para la total Muchas gastrectomias totales se han efectuado en pacientes con carcinoma gastrico avanzado

La gastrectomia mas radical aumenta la esperanza de la erradicacion completa del cancer gastrico y se justifica segun los indices actuales de mortalidad operatoria

ZUSAMMENFASSUNG

Die Heilbarkeitt des Magenkrebses haengt davon ab, dass die Diagnose frueher gestellt und der chirurgische Eingriff radikaler durchgefuehrt wird, als es, nach den vorliegenden Statistiken zu urteilen, im allgemeinen der Fall ist.

Um einen hoeheren Prozentsatz von Kranken der Magenresektion zugaenglich zu machen, ist die Ausfuehrung der Probelaparotomie in der grossen Mehrzahl der Faelle gerechtfertigt.

Die Operationssterblichkeit der partiellen Magenresektion betraegt 5%, die der radikalen Totalresektion 7.7%.

Die Quote der die Fuenfjahresperiode Ueberlebenden ist immer noch zu niedrig, naemlich 26.7% bei den partiellen und 12.5% bei den Totalresektionen. Die meisten Magenresektionen wurden an Kranken mit vorgeschrittenen Krebsen ausgefuehrt.

Eine radikalere Ausfuehrung der Magenresektion vergroessert die Hoffnung auf voellige Ausrottung des Magenkrebses und erscheint im Hinblick auf die gegenwaertigen Ziffern der Operationssterblichkeit berechtigt.

RIASSUNTO

Le possibilità di cura del cancro gastrico sono legate alla diagnosi precoce e all'asportazione radicale assai più di quanto non si possa desumere dalle statistiche.

Bisogna sottoporre all'intervento esplorativo la grande maggioranza dei casi per poter procedere alla resezione in una più alta percentuale di malati. La mortalità operatoria per la resezione gastrica è del 5%, per la gastrectomia totale del 7.7%.

La quota di sopravvivenza dopo 5 anni è ancora troppo bassa: 26,7% nelle resezioni, 12.5% nelle gastrectomie totali. La maggior parte di queste ultime fu praticata in soggetti con carcinoma gastrico in stadio avanzato.

Gli interventi più radicali permettono di contare su una più completa asportazioni, 12,5% nelle gastrectomie totali. La loro bassa mortalità operatoria.

SUMÁRIO

A curabilidade do cancer do estomago depende do diagnostico precoce e de uma remoção mais radical do que os estatisticas indicam. A exploração cirurgica e justificavel em uma large maioria de casos de módo que a ressecção gastrica possa ser executada em uma maior percentagem. A taxa de mortalidade por gastrectomia parcial é de 5 por cento; por gastrectomia total radical, 7.7 por cento. A taxa de sobrevida de cinco anos e ainda bastante baixa—26.7 por cento para a parcial e 12.5 por cento para a total. A maior parte das gastrectomias totais foi executada em pacientes com carcinoma gastrico avançado. Gastrectomias mais radicais oferecem renovada esperanca de completa erradicação de doença maligna do estomago e é justificada em face da presenta taxa de mortalidade.

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Tumors of the Ovary

Endocrine and Other Rare Ovarian Growths

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IN CONSIDERING tumors of the ovary, it would not be amiss for us to look at the ovarian anatomic picture with its schematic relations (Fig 1, from Patton) which shows at once the various histologic and anatomic parts of the ovary from which these tumors arise

The classifications of ovarian tumors is not always easy and there is no one classification that is acceptable to everyone I am going to refer to those of Barzilai[1] and Novak Barzilai's classification is as follows

1 Tumors in which cells and structures may be traced back to developmental and cyclic phases of the graafian follicle (a) granulosa cell tumor and (b) theca cell tumor

2 Tumors in which cells and structures may be traced back to different stages of development of the male gonad (a) arrhenoblastoma, (b) virilizing lipoid cell tumor (?)

3 Dysgerminoma, a tumor in which cells and structures may be traced back to the cell type seen in the early mesenchymal core of the ovary

4 Tumors composed of tissues belonging to almost any part of the somatic body that may be traced to a totipotent or nearly totipotent cell, such as a somatic blastomere or the early mesenchyme (a) adult teratoma and (b) embryonal teratoma

5 Tumors in which cells and structures may be traced back to tissues that are normally found in the extrafollicular portion of the ovary and may possibly represent a one sided developed teratoma (a) fibroma and (b) sarcoma

6 Tumors that may be traced back cytologically and histologically to structures belonging to organs that in adult stages are adjacent to the ovary and in embryonal stages are closely entwined with the ovarian anlage (Mullerian, Wolffian, and enteric tissue), and which may also represent a one sided developed teratoma (a) Brenner tumor, (b) endosalpingioma, (c) seroanaplastic carcinoma, (d) pseudomucinous adenoma, (e) pseudomyxoma ovarii et peritonei, (f) pseudomucinous adenocarcinoma, and (g) mesonephroma

7 Secondary ovarian tumors showing (1) anaplastic and regressive changes leading to a pattern that does not recall the primary growth, and (2) leading to a pattern that clearly points to the structure of the primary tumor (a) Krukenberg tumor and (b) other secondary tumors

This classification of ovarian tumors differs from the traditional scheme, and Barzilai states that this is slightly different from the classification in 1936 in Trieste and in Milan and Amsterdam in 1938 Of special note is the emergence of the endosalpingioma and the mesonephroma as definite oncologic entities, the establishment of the relation between teratoma and apparently simple ovarian tumors, and the fact that the benign or malignant character of the tumors has

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**Assistant in Department of Medicine Medical College of Alabama not been used as a basis for classification. Lesions of the ovary showing no neoplastic proliferative tendency, such as follicular cysts or endometrial cysts, have not been included in this classification. In the working classification given by Novak, he lists the growths under three main headings: (1) benign tumors of the ovary, (2) malignant tumors of the ovary and (3) functioning tumors of the ovary.

In the first group, benign tumors of the ovary, he mentions non-neoplastic cysts. This includes the follicular cysts that arise from simple cystic overdistention of follicles during the process of atresia folliculi. This type of cyst is to be recognized as a nonmalignant and non-neoplasic tumor or enlargement of the ovary which, if properly diagnosed, is usually handled conservatively. If removal is necessary, enucleation of the cyst is done without sacrifice of the functioning tissue of the ovary. In this type of tumor, the granulosa layer and also the thickened layer of tissue within the cyst wall exist. The corpus luteum cyst is one which is observed in the cystic bed where ovulation has taken place. This is a perfectly normal setting which causes no trouble in the great majority of instances and is observed only in cases in which there is overdistention or an overgrowth of corpus luteum. This tissue or gland is the location from which the progesterone is secreted.

Another of these simple cell types is the germinal inclusion cyst, which is caused by invagination of the epithelium of the ovary. These are most common in middle-aged and elderly women.

The endometrial ovarian cyst, a frequent feature of pelvic endometriosis, is secondary to abnormalities of the endometrial tissue within the ovary itself. Of the neoplastic or proliferative cysts of the ovary there are three chief varieties: (1) pseudomucinous or pseudomyxomatous cystadenoma; (2) serous cystadenoma, and (3) dermoid cyst. The cystadenomas are far more common than the dermoids, constituting the most frequent of all ovarian tumors, (the solid cystic type).

Pseudomucinous cystadenomas may reach enormous size. They average much larger than the serous variety. These tumors appear as rounded, ovoid, or irregularly lobulated growths with a smooth outer whitish or bluish white surface. The content of the cyst is generally a clear, viscid fluid, sometimes very thick, at other times thin. The cut surface shows the cavity to be divided by septums into a varying number of compartments or locules. These tumors have often been spoken of as multilocular cysts. They become secondarily malignant in a small percentage of cases (5 per cent, according to Mayer). Microscopically the distinctive feature of pseudomucinous cysts is the characteristic single layer, undulating in outline, of tall, pale-staining, secretory epithelium, with nuclei placed at the basal poles of the cells. Goblet cells are often seen. The epithelium has a characteristic adenomatous tendency, producing invaginations that develop into other cysts in the wall of the original cavity (daughter cysts).

It is now generally accepted that, except in a small group of cases, pseudomucinous cystadenomas are to be looked upon as teratomas in which certain entodermic elements have blotted out all other structures.

The serous cystadenoma is only slightly less common than the pseudomucinous, for serous cysts may reach a weight of many pounds. Grossly the external appearance may be similar to that of a pseudomucinous cyst, but in some cases the surface presents papillomatous outgrowths which may resemble a cauliflower. In contradistinction to pseudomucinous cystadenoma, this papillomatous tendency is highly characteristic of the serous growths.

Microscopically, the epithelium or serous cysts is quite different from that of the pseudomucinous tumors and presents much more variation in the individual case.

Although there is some difference of

opinion as to the origin of the serous type from the germinal epithelium of the ovary, it is possible to demonstrate microscopically all stages of transition, from simple invagination of the germinal epithelium to invagination plus slight papillary formation to the typical serous papillomatous cyst Papillary excrescences are common on the exterior of the cyst wall but are even more common on the interior When the papillary serous cystadenoma is unilateral and entirely free and no implants are observed on other viscera, one should still consider doing a radical operation, especially for women in their late thirties and beyond As a general principle, one should remove these tumors intact whenever possible instead of using a trocar, as it is very difficult to prevent some spill around a trocar

Dermoid cysts among the commoner ovarian tumors, but they occur less frequently than do the cystadenomas They range from microscopic growths to very large tumors About one fourth are bilateral Dermoid cysts represent a subdivision of ovarian teratoma They are distinguished from the more serious solid tumors chiefly by their cystic character and their nonmalignant nature The solid teratomas always show a conglomeration of structures derived from all three fetal layers, whereas the cystic tumors show more of the ectodermal and occasionally the mesodermal admixture

As to the symptoms of neoplastic cysts, there is little that is characteristic of ovarian cystadenomas For example, no distinctive influence is exerted on the menstrual function At times menstruation may be rather free, probably as a result of the hyperemia produced by the tumor In other cases, especially in the presence of large bilateral tumors, hypomenorrhea may result from destruction of most of the ovarian parenchyma Dysmenorrhea may or may not be a symptom, but with the larger growth there is likely to be a sense of heaviness or pressure, with dull aching pain, in the affected side of the pelvis

If there should be a rupture of the cyst (which is relatively infrequent but may occur spontaneously or as a result of trauma), there is pain due to the peritoneal irritation Nausea and vomiting often occur, with a moderate elevation of temperature, pulse rate, and leukocyte count and a greater or less degree of prostration At times there may be actual shock

Benign Solid Tumors of Ovary—Fibroma is a not uncommon tumor of the ovary It appears sometimes as a small nodule on the surface or in the substance of the ovary, while in other cases it may reach a huge size, filling most of the abdominal cavity and weighing many pounds The cut surface is whitish or yellowish white, and is of either homogeneous or trabeculated appearance

Microscopically the structure is that of fibrous tissue of varying morpholic character

Meigs has called attention to a peculiar syndrome that may occur with these tumors, characterized by hydrothorax as well as ascites, and a small group of such cases has been described

The treatment of fibroma is surgical Operation should be performed as early as possible

With a typical fibroma syndrome—ascites, hydrothorax and tumor in the abdomen—the patient may be cachexic or have an "ashy" appearance that is suggestive of malignant disease We might refrain from operating on these cases feeling that the patient has general metastases and surgery would not be indicated However, when surgery is done in this type of case, remarkable and dramatic relief is obtained

Brenner Tumors of the Ovary This form of tumor has been recognized recently, largely through the investigations of the late Robert Meyer Its gross characteristics are not unlike those of fibroma, and a certain proportion of fibromas can be shown to be really Brenner tumors

The microscopic structure of these tumors is characterized by the presence of epithelial cell nests or columns in a fibromatous matrix. The distribution of these cell nests throughout the stroma may at first suggest malignancy, but the cells show a remarkable uniformity, with not the slightest suggestion of anaplastic activity. The characteristic cell nests often show a tendency to central cystic degeneration, the central cavity frequently containing a cytoplasmic mass with a superficial resemblance to an ovum within a follicle. Brenner tumors are rather rare, and they occur usually in older women, the majority of patients being beyond 50.

Other benign solid tumors, such as lymphangioma, hemangioma, fibroadenoma, and adenomyoma, are very rare.

Malignant Tumors of Ovary.—Carcinoma of the ovary is relatively frequent, ranking next to the various forms of uterine cancer so far as the female reproductive organs are concerned. It may be primary in the ovary or secondary to cancer in other organs. Carcinoma of the ovary may be solid or cystic. The latter is the more common, in a proportion given by Meyer as 205 to 139 on the basis of the study of a large series of reported cases. The same author stated that analysis of a large group showed cancer of the ovary to be bilateral in 50.9 per cent of the cases. Another interesting figure arrived at by Meyer in his collective study was that fully 14.9 per cent of all ovarian tumors are malignant.

Primary Solid Carcinoma of Ovary: The classification of solid primary ovarian cancer is unsatisfactory. The usual histogenetic method of grouping the tumors is inapplicable. The following variations or patterns may be noted:

1. Adenocarcinoma. This, the most common form, is characterized by its glandular architecture. Like epidermoid carcinoma, it may present various degrees of differentiation.
2. Medullary carcinoma. This type is distinguished by its richness in epithelial cell elements. There is very little connective tissue, though trabeculae of the latter separate the epithelial fields.
3. Carcinoma simplex. This is a solid carcinoma in which the epithelial and connective tissues are fairly well balanced.
4. Scirrhous carcinoma. Fibrous tissue preponderates, the epithelium being present in the form of strands or nests that appear to be squeezed by the surrounding connective tissue.
5. Alveolar carcinoma. The epithelial cells are arranged in alveolar groups of various sizes, with connective tissue between.
6. Plexiform carcinoma. The carcinoma cells appear in narrow cords, often anastomosing with one another.

Gross Characteristics: The size of solid ovarian carcinomas is variable, though most of them give rise to symptoms that call for treatment before they have reached more than moderate size. In the majority of cases, primary cystic carcinoma develops in previously benign cystadenomas of the ovary. Meyer expressed the opinion that this is practically always the case; Ewing, on the other hand, has differentiated a form of carcinoma that may be cystic from the beginning.

Secondary carcinoma in dermoid cysts is rare, occurring in only 1.7 per cent of dermoid tumors (Meyer) and usually assuming the form of epidermoid carcinoma, since it develops from the skinlike elements in such tumors.

Secondary or Metastatic Carcinoma of the Ovary.—Almost any type of ovarian carcinoma may occur as a result of metastasis from primary sites in other parts of the body, especially in the later stages of such malignant processes.

A not infrequent variety of secondary ovarian cancer is that seen in association with carcinoma of the gastrointestinal tract or of the secondary organs of digestion. Of this type is the Krukenberg tumor. There is one special variety of secondary ovarian carcinoma that assumes special characteristics, and this one has the designation Krukenberg applied. This may be an accompaniment of primary carcinoma in any portion of the gastrointestinal tract, most frequently the pylorus but not infrequently the colon, rectum, small intestine, liver or gallbladder

Many have concluded that the cells, after penetration of the stomach walls, gravitate downward to the ovarian wall by way of the peritoneal fluid The ovaries, by virtue of portals of entry offered by ovulation, are believed to offer easy sites for implantation However there are many objections to this theory retrograde lymphatic transplantation may be the important factor, though in some cases the hematogenous route plays the important role The tumors are about 80 per cent bilateral On microscopic examination the Krukenberg tumor is distinctive showing a small nest or strand of epithelial cells distributed throughout a fibrous or gelatinous stroma Especially characteristic are the so called signet cells

Extension of Ovarian Carcinoma —The contralateral ovary becomes involved in more than one half of all cases of ovarian carcinoma Both the tube and uterus are frequently the seats of metastatic extension

Clinical Characteristics of Ovarian Carcinoma —The most important symptoms of ovarian carcinoma are unfortunately rather late ones as the onset of this disease is almost always insidious The presence of a mass in the lower part of the abdomen is the first indication of the disease in a considerable proportion of cases, the "lump" being felt by the patient herself in one or the other lower quadrant Moderate heaviness or occasional pain may be noted Occasional menstrual disorder may occur In a small proportion of the postmenopausal cases slight bleeding or a discharge of blood is noted

Ascites is a relatively common accompaniment of ovarian cancer, especially of the papillary varieties

The later course is characterized by progressive weakness loss of weight, often recurring ascites gastrointestinal disturbances and anemia, death occurring after two to several years

Sarcoma of the ovary is far less common than carcinoma, the comparative incidence being about 1 in 40 It may occur at any age Many authors have expressed the opinion that it is frequent in children This is open to doubt, many ovarian tumors formerly diagnosed as sarcoma are now recognized as either granulosa cell carcinoma or dysgerminoma Various types of sarcoma occur in the ovary, the spindle variety being more common than the round cell type The symptoms are like those one would expect with any large solid ovarian tumor, and the preoperative diagnosis is difficult

Teratoma of the ovary may be cystic or solid The cystic form is represented by the benign dermoid The solid teratoma differs from the simple dermoid not only because it is a solid tumor but because it is malignant and contains elements derived from all three of the fetal layers

The histogenesis of the teratoma is not clearly known, the two chief theories being (1) origin from segregated blastomeres, and (2) origin from unfertilized sex cells These two theories are also considered in connection with the origin of dermoid cysts

Teratoma may occur at any age, but is most common in the younger patients The tumor is usually of small or moderate size It is firm and solid, with frequently occurring cartilaginous or bony areas and often has small cavities produced by degeneration

A subdivision of this group is the so called struma ovarii, or thyroid tumor of the ovary

Dysgerminoma —Origin This interesting tumor type is believed to arise from cells that date back to the early undifferentiated phase of gonadal development Grossly this tumor is of the solid type though when large it often shows degeneration and cystic cavities When small it is surrounded by a rather dense capsule The cut surface of the tumor is gray or grayish pink Microscopically, there are few tumors of the ovary that present such a distinctive picture, so that the diagnosis in most cases is easy, once one is familiar with the picture. This tumor undoubtedly belongs in the malignant group, but there is much variation in this respect in individual cases.

Clinical Characteristics: As to the incidence of dysgerminoma, it appears to be about one-third as common as granulosa cell carcinoma, which in turn makes up something like 10 per cent of all primary malignant ovarian tumors (Fauvet). Dysgerminoma is characteristically a tumor of early life. It occurs not infrequently in very early childhood and is common in the second and third decades of life.

There is no characteristic effect on menstruation, although it must be remembered that dysgerminoma often occurs in women who have had amenorrhea.

Functioning Tumors of Ovary.—There are a number of ovarian tumors, all belonging to the malignant group, which deserve separate discussion because they have the common characteristics of functional endocrine activity and are capable of producing interesting biological phenomena of one sort or another.

Innumerable examples are adducible in the case of the pituitary, thyroid, parathyroid, pancreas, adrenal (both cortex and medulla) and gonads, both male and female.

The ovarian tumors to which endocrine function may be ascribed are (1) granulosa cell carcinoma and the closely allied thecoma and luteoma; (2) arrhenoblastoma; (3) adrenal tumors of the ovary, and (4) thyroid tumors of the ovary (struma ovarii), the first two groups having their origin from certain undifferentiated cell groups observed in the early stages of gonadogenesis.

Granulosa Cell Carcinoma, Thecoma and Luteoma (Feminizing Group): These neoplasms are discussed together, since they have a common origin and since their biologic effects are so similar. They are given their special designations chiefly because of the different morphologic pattern.

Histogenesis: The prevailing concept of granulosa cell tumors is that they arise from the cells of the early ovarian mesenchyma.

Grossly, these tumors vary in size from growths only a few millimeters in diameter to tumors filling a large part of the abdominal cavity. When small they are apt to be solid, but the larger tumors not infrequently contain one or many cystic cavities.

Microscopically, the diagnosis of granulosa cell carcinoma is based on the granulosal character of the constituent cells and on the growth characteristics of these cells.

As for thecoma, in a considerable proportion of cases a fibromalike character may be given to the gross histologic picture by the presence of large numbers of connective tissue elements.

Microscopically, the coma is distinguished especially by "the presence of bundles of broad spindle cells, epitheloid in appearance, distributed in an irregular interlacing manner throughout the tumor, separated by varying sized bands of connective tissue and often hyaline plaques."

Luteinization of Granulosa Cell Tumors and Luteoma: An interesting histologic characteristic of this tumor type is that the constituent granulosa or theca cells may at times undergo a transformation into what are evidently typical lutein cells.

Clinical Characteristics: Granulosa call carcinoma of the ovary may be considered a fairly common tumor, comprising roughly 10 per cent of all solid malignant ovarian neoplasms (Fauvet, Novak).

When the tumor occurs during reproductive life, as it does in a large proportion of cases, the clinical syndrome is not so striking as when it occurs against the background of the prepubertal or the postmenopausal phase. During the reproductive years, on the other hand, the tumor merely adds quantitatively to the cyclic hormonal content of the blood. No change would be expected in the secondary sex characteristics, for example, because these have long since been developed, while the effect upon menstruation would be merely quantitative. It is an accepted fact that the malignancy of this group of tumors is much less than that of ovarian cancer in general, and some prefer to speak of this tumor as granulosa cell tumor rather than granulosa cell carcinoma

Arrhenoblastoma and Adrenal Ovarian Tumors (Masculinizing Group) As compared with the feminizing group masculinizing tumors are much less common The term arrhenoblastoma was originally applied by Meyer to a group of ovarian tumors whose common characteristic is their origin from the male gonadogenic structures at some phase of embryonic development

Histogenesis of Arrhenoblastoma The early development of the ovary is identical with that of the testis and in the later stages of female differentiation certain element of male differentiating potency may be left in the medullary portion of the ovary

Gross Pathologic Picture These tumors, as encountered at operation, are usually of moderate size, and may be very small, though in a number of reported instances they have reached large proportions, even to the size of a man's head

Microscopic Pathologic Picture A description of the microscopic characteristics of arrhenoblastoma is not easy, because of the extreme variations that may be encountered

Malignancy Although arrhenoblastoma is properly classified as malignant tumor, there is no doubt that its degree of malignancy, like that of the granulosa cell tumor is much less than that of ovarian cancer in general

Clinical Features Arrhenoblastoma of the ovary occurs most frequently in relatively young patients, the decade between 20 and 30 showing the largest incidence

The first symptom noted by most patients is amenorrhea occurring abruptly Regression of the mammary glands soon occurs Changes in body contour may not be conspicuous and are often not noticed by the patient herself, or not at least until hirsutism has developed A change in the patient's voice is often noticeable Hypertrophy of the clitoris may be present The crucial clinical test in substantiation of a diagnosis of arrhenoblastoma is regression of the abnormal masculinization symptoms after removal of the tumor

The treatment of arrhenoblastoma is surgical

Adrenal Tumors of the Ovary—The chief interest of this group lies in the fact that it gives rise to a clinical syndrome identical with that described for arrhenoblastoma

Treatment of Ovarian Tumors—Gross Pathologic Picture in Relation to Treatment One cannot consider intelligently the treatment of ovarian tumors without discussing the pathologic aspects Selection of the correct type or extent of surgical intervention depends more on the operator's knowledge of the gross pathologic picture than on anything else Needling of retention cysts of the ovary is usually harmless but of little value Dissection of the retention cyst or cystectomy is usually the better procedure When the opposite ovary is absent, one may go to extremes to save a bit of ovarian tissue

The corpus luteum cyst may be very small though sometimes it attains a diameter of 5 to 6 cm and in rare instances an even greater diameter Corpus luteum cysts are not to be confused with multiple lutein cysts of the ovary occurring with hydatidiform mole and chorioepithelioma

Germinal inclusion cysts are frequent microscopic observations on histologic examination of ovaries They usually do not attain any great size

TeLinde[3] has stated that the presence of an ovarian neoplasm is an indication for laparotomy, whether or not the tumor gives rise to symptoms The justification for this statement is the incidence of malignancy in ovarian neoplasms, which is in the neighborhood of 15 per cent This is too high to justify taking a chance on further conservatism The problem of ovarian neoplasms may be compared with the problem of lumps in the breast Clinical experience coupled with pathologic studies has demonstrated that an ovarian tumor may be benign for years and finally become malignant

Aside from the possibility of malignancy, other potentialities indicate operation, complicate the operation and increase the operative risk. The commonest of these are torsion of the pedicle, infection and rupture.

General Therapeutic Considerations: The value of the admonition that all ovarian neoplasms should be operated on depends on the ability of the examiner to distinguish between enlargement due to neoplasm and enlargement due to other causes. Slight enlargement of the ovary due to multiple small follicular cysts, single follicular cysts or corpus luteum retention cysts are common.

Most ovarian tumors are resistant to roentgen therapy. TeLinde's experience does not indicate that good results have been obtained by this method, although Walter, Bachman and Harris concluded that roentgen therapy was of great value in their experience. They reported a cure rate of 6.3 per cent for nonirradiated as compared with a rate of 20 per cent for irradiated patients.

Prognosis of Ovarian Carcinoma.—The statistics on "five-year cure" of carcinoma of the ovary vary greatly, the limit ranging from less than 10 per cent to almost 50 per cent. Since in carcinoma of the ovary one is dealing with a variety of types of cancer with varying degrees of malignancy, it is obvious that the end results will differ.

SUMMARY AND CONCLUSIONS

1. Classifications of ovarian tumors have generally been highly unsatisfactory. Consequently, many have been suggested by different authors. Two authors, Barzilai and Novak, have presented workable classifications. These are outlined in the text for the reader's convenience.

2. Three general groups of tumors are classified: (1) benign tumors, which in many instances are of the non-neoplastic type (simple cyst, corpus luteum cyst, etc.); (2) neoplastic tumors, including benign and malignant types, and (3) the functioning type of ovarian tumor.

3. Of the tumors frequently observed there are two types, cystic and solid. Solid ovarian tumors should always be looked on with suspicion as possibly malignant, though certain solid ovarian tumors are generally classed as benign: e.g., fibroma; the Brenner tumor, which resembles fibroma and occurs chiefly in women beyond the age of 50; hemangioma; lymphangioma; fibroadenoma, and adenomyoma.

4. Cystic tumors frequently become extremely large. Their growth is rather rapid.

5. All ovarian tumors should be suspected of malignancy until proved benign. Malignant ovarian tumors include primary solid carcinoma, with the following patterns or variations: adenocarcinoma, medullary carcinoma, carcinoma simplex, scirrhous carcinoma, alveolar carcinoma and plexiform carcinoma. They also include secondary or metastatic carcinoma, with involvement of the contralateral ovary in more than 50 per cent of cases. The important symptoms of ovarian malignant tumor are late, the presence of a mass in the lower part of the abdomen is often the first indication. Other symptoms are pain, occasional menstrual disorder, bleeding, ascites and, later, progressive weakness, loss of weight, gastrointestinal disturbances and anemia. Also included in the list of malignant ovarian tumors are sarcoma (much rarer than carcinoma), solid teratoma, and dysgerminoma. Finally, ovarian tumors having endocrine function, such as granulosa cell carcinoma, thecoma, luteoma, arrhenoblastoma, adrenal ovarian tumors and thyroid ovarian tumors (struma ovarii) are consistently malignant.

6. The treatment of non-malignant growths of the ovary should be conservative. The value of the admonition that all ovarian tumors should be subjected to operation depends on the ability of the examiner to distinguish between enlargement due to neoplasm and enlargement due to other causes.

7. Diagnosis of the functioning type of tumor should be made as early as possible. If this is done, the patient will suffer far fewer disfiguring symptoms, such as hirsuties.

8 Most ovarian tumors are resistant to roentgen therapy Surgical intervention, therefore, is usually the treatment of choice The prognosis is variable, statistics on five year cures of carcinoma of the ovary ranging from less than 10 per cent to almost 50 per cent

RÉSUMÉ ET CONCLUSIONS

1 La classification des tumeurs ovariennes n'est pas satisfaisante Pour cause, plusieurs auteurs ons suggere leur classification Barzilai et Novak ont presente une classification acceptable

2 Trois groupes generaux de tumeurs a) les tumeurs benignes la plupart du temps non neoplasiques (simple kyste kyste du corps jaune etc) b) les tumeurs neoplasiques comprenant les benignes et les malignes c) les tumeurs ovariennes du type fonctionnel

3 Les 2 types de tumeurs les plus rencontres sont kystiques et solides Les tumeurs solides de l'ovaire devraient toujours etre considerees avec suspicion comme possiblement malignes

4 Les tumeurs kystiques deviennent frequemment tres volumineuses Leur croissance est rapide

5 Toutes les tumeurs ovariennes devraient etre soupçonnees de malignite avant preuve de leur benignite

6 Le traitement des tumeurs begnines devrait être conservateur

7 Le diagnostic des types fonctionnels de tumeurs devrait etre le plus precoce possible Si c'est le cas, le patient n'aura pas a souffrir d'autant de symptomes defigurants comme l'hirsutisme

8 La plupart des tumeurs ovariennes sont resistantes a la radiotherapie L'intervention chirurgicale est donc le traitemente de choix

RESUMEN Y CONCLUSIONES

1 Las clasificaciones de tumores ováricos no han sido generalmente muy satisfactorias En consecuencia, muchas han sido sugeridas por diferentes autores Entre estos, Barzilai y Novak han presentado laboriosas clasificaciones

2 Se han clasificado tres grupos generales de tumores (1) tumores benignos, que en su mayoria son de tipo no neoplasico (quiste simple, quiste del cuerpo amarillo, etc), (2) tumores neoplasicos, incluyendo tipos benigno y maligno, (3) el tipo funcionante de tumor ovarico

3. De los tumores frecuentemente observados hay dos tipos quistico y solido Los tumores ovaricos solidos deben mirarse siempre con la sospecha de ser posiblemente malignos

4 Los tumores quisticos llegan a ser extremadamente grandes Su crecimiento es mas bien rapido

5 Todos los tumores ovaricos deben ser sospechosos de malignidad hasta probar que son benignos

6 El tratamiento de las neoformaciones ovaricas no malignas debe ser conservador

7 El diagnostico temprano del tipo funcionante de tumor debe hacerse lo mas pronto posible Si esto tiene lugar, la paciente sufrira unos cuantos sintomas que la desfiguren, como el hirsutismo

8 Muchos de los tumores ovaricos son resistentes a la rontgenterapia Por consiguiente, la intervencion quirurgica es el tratamiento de eleccion

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

1 Klassifizierungen der Eierstocksgeschwuelste sind im Allgemeinen hoechst unbefriedigend Folglich sind viele Einteilungen von verschiedenen Autoren vorgeschlagen worden Barzilai und Novak haben brauchbare Klassifikationen vorgelegt

2 Es werden drei Hauptgruppen von Geschwuelsten unterschieden a] gutartige Geschwuelste, die in vielen Faellen keine echten Neubildungen sind [einfache Zysten, Corpus luteum Zysten usw], [b] echte Neubildungen, die sowohl die gutartigen als die boesartigen Formen einschliessen und [c] der Funktionstypus der Eierstocksgeschwuelste

3 Unter den haeufig zur Beobachtung

kommenden Geschwuelsten gibt es zwei Arten, die zystische und die solide. Die soliden Eierstocksgeschwuelste muessen stets den Verdacht auf Boesartigkeit erwecken.

4. Die zystischen Geschwuelste werden haeufig aeusserst umfangreich und wachsen ziemlich schnell.

5. Alle Eierstocksgeschwuelste muessen als boesartig verdaechtigt werden, solange nicht ihre Gutartigkeit nachgewiesen ist.

6. Die Behandlung von nicht boesartigen Eierstocksgeschwuelsten sollte konservativ sein.

7. Die Diagnose des Funktionstypus einer Geschwulst sollte so frueh wie moeglich gestellt werden. Wenn dies geschieht, koennen der Patientin viele entstellende Symptome wie Hirsutismus erspart werden.

8. Die meisten Eierstocksgeschwuelste widerstehen der Roentgenbestrahlung. Der chirurgische Eingriff stellt daher gewoehnlich die Behandlungsmethode der Wahl dar.

SUMÁRIO E CONCLUSÕES

1. A classificação de tumôres ovarianos tem sido de regra altamente insatisfatória. Consequentemente, muitas tem sido propostas pelos autôres. Dois autôres, Barzilai e Novak, apresentaram classificacões com cosuistica digna de credito.

2. Tres grupos gerais de tumôres são classificados: (1) tumôres benignos que em muitas circunstancias são do tipo não neoplastico (quisto simples, quisto de côrpo luteo, etc) ; (2) tumôres neoplasticos, incluindo tipos denignos e malignos, e (3) o tipo funcional de tumor ovariano.

3. Dos tumôres frequentemente observados ha 2 tipos, quistico e solido. Os tumôres ovarianos solidos devem ser encarados sempre sob a possibilidade de serem malignos.

4. Os tumôres quisticos se tornam frequentemente bastante grandes. Seu crecimento é sobremeaneira rapido.

5. Todos os tumôres ovarianos devem ser suspeitados de malignidade até serem provados benignos.

6. O tratamento de tumôres não malignos do ovario deve ser conservativo.

7. O diagnostico precóce do tipo funcional de tumôr deve ser feito tão precocemente quanto possivel. Si isto se dá, a paciente sofrerá ulteriormente menos sintomas desfigurantes, tais como o hirsutismo.

8. Unitos tumôres ovarianos são resistentes á roentgentherapia. A intervenção cirurgica é usualmente o tratamento de escolha.

CONCLUSIONI RIASSUNTIVE

1. La classificazioni dei tumori ovarici sono sempre state assai imperfette, e molte ne sono state proposte da vari autori. Soddisfacente quella della Barzilai e Novak.

2. Sono stati classificati tre gruppi generali di tumori: (1) i benigni, che in molti casi non sono neppure tumori (cisti semplici o luteiniche, etc.) ; (2) i tumori veri e propri, che comprendono forme benigne e maligne; (3) i tumori ovarici funzionanti.

3. I tumori ovarici più frequenti possono essere cistici o solidi; questi ultimi devono essere considerati potenzialmente maligni.

4. I tumori cistici frequentemente divengono enormi e la loro crescita è abbastanza rapida.

5. Ogni tumore ovarico deve essere considerato maligno, almeno fino a che non si sia provata la sua benignità.

6. La cura delle forme non maligne potrà essere consevativa.

7. La diagnosi di tumore funzionante dovrà essere posta precocemente.

8. La maggior parte dei tumori ovarici resistono alla Roentgenterapia, così che la cura chirurgica rimane il trattamento di elezione.

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Surgical Treatment of Esophageal Hiatus Hernia

A Study of Forty-Two Cases

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LOS ANGELES

ACCORDING to Bowen,[1] congenital diaphragmatic hernia was first described by Riverius Lazars in 1689, and Morgagni wrote a monograph on congenital hernias in 1769. Hedblom[2] stated that Bowditch, in 1854, was the first to recognize a diaphragmatic hernia in a living patient, and that Lichtenstein, in 1874, collected 345 cases from the world literature, principally as pathologic reports. The condition was recognized clinically in only 2 cases, and Lichtenstein reported that in the first case it was diagnosed on purely objective grounds. By 1931 Hedblom collected over 1,000 cases reported in the literature since 1900.

Bowen[1] stated that Badenheuer in 1879 was the first to perform a laparotomy for nontraumatic diaphragmatic hernia and that Pierre Duval, in 1913, was the first to use the combined thoracoabdominal approach in the repair of a diaphragmatic hernia.

Embryologic of Formation of the Diaphragm.—The embryogenesis of the diaphragm is a highly complex process, since the component parts are derived from different sources.

According to Grant[3] (figure 1), the posteromedial part arises from the primitive dorsal mesentery and the lateral portions are dissected from the body wall by the developing lungs. The anteromedian part arises from the septum transversum. The gap between the lateral and posteromedial parts is closed by the pleuroperitoneal membrane. In young embryos the hinder part of this composite partition lies at the level of the second cervical vertebra; it migrates from this point to gain ultimate attachment to the second and third lumbar vertebra as the crura of the diaphragm. On passing the third, forth and fifth cervical vertebra, portions of these myotomes extend into the diaphragm, bringing their nerve supply, the source of which is ultimately known as the phrenic nerve.

The thick mesodermal mass surrounding the vitelline veins prior to their entry into the sinus venarum is the septum transversum. Eventually the septum separates into three layers: the upper layer forms part of the pericardium, the intermediate layer forms part of the diaphragm and the lower layer forms the connective tissue stroma of the liver.

Ladd and Gross[4] stated that "the formation of the diaphragm is sufficiently complicated so that there is little wonder that congenital defects are apt to appear. If arrest in development occurs early in embryonic life, the child is born (as is typical in most cases) with a free communication between a pleural cavity and the abdomen. If arrest of development occurs after the pleural and peritoneal membranes have closed the defect, but before the muscle has appeared, the child is born with a thin hernial sac which covers the upward protruding intestines."

Anatomic Aspects. — The diaphragm (Grant[3]) is the dome-shaped musculoaponeurotic partition separating the abdomen from the thoracic cavities. It has a depressed central portion with a rounded cupola on each side. The median portion rises to the level of the xiphisternal joint, which corresponds to the body of the ninth thoracic vertebra. The cupola rises on the right side to the fifth rib and on the left side to the fifth interspace.

The diaphragm (Fig. 2) is attached posteriorly by two crura to the bodies of

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the upper three lumbar vertebra on the right and to the upper two lumbar vertebra on the left Laterally, it is attached to the inner surfaces of the seventh to the twelfth costal cartilage through interdigitation with slips of the transversus abdominis Anteriorly the diaphragm is attached to the back of the xiphoid process

Posteriorly there is a gap between the two crura through which the aorta passes, while anteriorly there is a slight gap between the two xiphoid slips Lateral to the xiphoid slip, the superior epigastric artery and vein pass from the chest to the rectus sheath Posteriorly in the midline the medial parts of the crura are fibrous and join in front of the aorta, above the celiac axis, to form the median arcuate ligament Laterally, between the crus and the slip from the twelfth rib, there are two spaces bridged by ligamentous bands which gain attachment to the psoas and quadratus lumborum muscles and are known respectively as the medial and lateral arcuate ligaments (lumbocostal arches) The medial arcuate ligament, bridging the psoas, extends from the lateral border of the crus to the transverse process of the first lumbar vertebra, and the lateral arcuate ligament extends from the first lumbar transverse process (over the quadratus lumborum) to the middle of the twelfth rib

The central portion of the diaphragm, called the central tendon, is composed of decussating and interwoven tendinous fibers and is shaped like a clover leaf

The diaphragm is pierced (1) by the inferior vena cava centrally, 1 inch (2 5 cm) to the right and at the level of the eighth thoracic vertebra and (2) by the esophagus 1 inch (2 5 cm) to the left of the midline at the level of the tenth thoracic vertebra The aorta passes behind the median arcuate ligament at the level of the twelfth thoracic vertebra It does not actually pierce the diaphragm and therefore is not affected by diaphragmatic contractions

In addition to the structures already mentioned some branches of the phrenic nerve pass through the caval opening The left phrenic nerve and some branches of the right phrenic nerve pierce the diaphragm independently and spread out on its abdominal surface

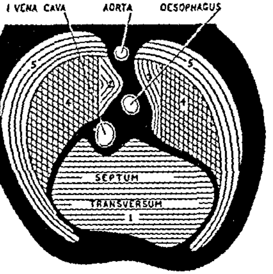

Fig 1 —Elements from which the diaphragm is formed 1, septum transversum 2 3 dorsal mesentery, 4 pleuroperitoneal membrane, 5 body wall (after Bowman courtesy of C Boileau Grant *A Method of Anatomy*)

The vagus nerves pass through the esophageal opening (the left in front and the right posterior to the esophagus), with esophageal branches of the left gastric artery and vein

The thoracic duct and a vein connecting the right ascending lumbar vein to the azygos system pass through the aortic opening On each side the great, small and least splanchnic nerves pierce the crura of the diaphragm to end in the celiac and renal ganglions

As has been mentioned, the motor nerve to the diaphragm is the phrenic nerve (from the third, fourth and fifth cervical levels) This nerve also has some senory fibers The seventh to twelfth intercostal nerves are sensory to the peripheral part of the diaphragm

The pericardiacophrenic, phrenic, musculophrenic and intercostal arteries supply the diaphragm

Pathogenesis — Callander expressed the opinion that the esophageal hiatus is often extensive because the stomach de velops at this point and later descends, leaving a space between the esophagus and the edge of the diaphragm, this being truly a congenital hernia (figure 2).

The so-called acquired type appears later in life (Yngve Candolin[6]), owing to the atrophy of fatty tissue lying between the esophagus and the encircling diaphragmatic ring.

According to Trueman,[7] the possibility of hiatus hernia depends upon the size of the hiatus, the age of the patient, and conditions producing increased intra-abdominal pressure, such as obesity, constipation, pregnancy (especially when frequently repeated) and trauma of the abdominal wall. In his opinion closure of the hiatus depends upon the presence of a connective tissue membrane rich in elastic fibers which become atrophic with advancing years. If the patient becomes obese, as frequently happens in the postmenopausal or the later sedentary years, this membrane becomes further weakened by infiltration with fat.

Bernstein[8] agreed that pregnancy, the high incidence of chronic constipation and postmenopausal obesity, all factors that tend to increase the abdominal pressure, seem to account for greater incidence in the female, the ratio being 2 to 1.

Bernstein[8] has said that, in addition to increased intra-abdominal pressure, the negative pressure in the chest or "even active muscular traction of the esophagus, might be effective in certain cases of hiatus hernias or cause for itself a 'traction luxation' of the cardiac part of the esophagus and stomach."

TABLE 1.—*Age of Occurrence*

Patients' Ages	Number of Cases	Per Cent
6 weeks	1	2.38
31-40 yr.	2	4.8
41-50 yr.	5	11.9
51-60 yr.	13	30.9
61-70 yr.	14	33.3
71-80 yr.	6	14.3
81-90 yr.	1	2.38

TABLE 2.—*Body Build*

	Obese	Normal	Thin	Emaciated
With hemorrhage	11	8	3	0
Without hemorrhage	4	9	4	3
Per cent	35.7	40.5	16.7	7.1

There may be a predisposition to the formation of diaphragmatic hernia in certain cases. Harrington[9] palpated the esophageal hiatus in 1,000 routine laparotomies and noted that in 55 per cent the esophageal hiatus closely approximates the esophagus. In 35 per cent the hiatus admitted one finger, in 8 per cent two fingers and in 2 per cent three fingers.

Kirklin and Hodgson[10] expressed the opinion that inflammatory processes in the esophagus in which cicatricial changes develop, with resultant narrowing and gradual shortening, may produce hiatus hernia by a gradual pulling up of the esophagus, which causes herniation of a small portion of the cardiac end of the stomach through the esophageal hiatus.

Classification. — Nontraumatic diaphragmatic hernia may be congenital or acquired. The congenital variety is due to embryonic deficiency and does not have a sac in most cases. According to Harrington,[9] the common sites of congenital hernia in the probable order of frequency are: (1) pleuroperitoneal hiatus (foramen of Bockdalek); (2) through the gap left by partial absence of the diaphragm, a gap usually situated in the posterior portion of the muscle; (3) esophageal hiatus due to a deficiency of the circular muscle bundles of the hiatus; (4) through the esophageal hiatus due to deficiency of the esophagus which is not elongated suffi-

TABLE 3.—*Classification*

	Concentric	Para-esophageal	Short Esophagus
With hemorrhage	16	1	5
Without hemorrhage	17	0	3
Per cent	78.6	2.38	19.05

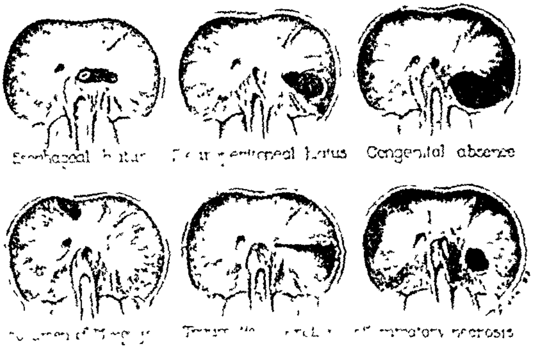

Fig 2.—Situations of [illegible] nd traumatic lacerations of the diaphra[illegible] mon types of diaphragmatic hernia. (C[illegible] West J. Surg. 44.

ciently to extend to the diaphragm, thus causing varying amounts of the stomach to remain above the diaphragm depending on the amount of shortening of the esophagus; and (5) through an anterior subcostosternal opening (foramen of Morgagni or Larrey's spaces).

If the hernia is acquired after birth the sites of occurrence are: (1) through the esophageal hiatus, a type in which there is a hernial sac; (2) through the region of fusion of the anlage of the diaphragm; (3) at sites named under the congenital types of hernia.

Pathologic Picture. — The term diaphragmatic hernia implies that the abdominal content, by reason of the higher pressure in the abdomen, has protruded into the thoracic cavity through some abnormal opening in the diaphragm. The abnormal openings may be caused by congenital deficiencies, by trauma or even by inflammatory necrosis. All true hernias have sacs, whereas a false hernia does not have a true sac. The sac may be absent in cases of traumatic hernia or hernia caused by inflammatory necrosis; it may be absent also in some cases of congenital hernia where the component parts of the diaphragm have failed to fuse. This has been noted in some patients with pleuroperitoneal hernias.

Traumatic diaphragmatic hernia may be caused by direct trauma, indirect trauma or inflammatory necrosis. Indirect trauma usually causes a tear in the dome or the posterior half of the left leaf of the diaphragm. Direct injury, such as lacerations and stab wounds or gunshot wounds, may lacerate the diaphragm at any point. Subdiaphragmatic abscess or drainage tubes used to drain an empyemic area may cause inflammatory necrosis of the diaphragm. In this case, of course, there is no hernial sac.

Sweet[10] is convinced that all hiatus hernias are of the sliding type, involving the wall of the fundus of the stomach, which makes up one surface of the sac, much as the wall of the cecum or the sigmoid becomes a component of the sac in certain inguinal hernias.

Bleeding occurs in nearly half of the cases. This is due to erosion and ulceration of the gastric mucosa either within the hernial ring or immediately above.

Bernstein[8] expressed the opinion that regurgitation of gastric juice into the

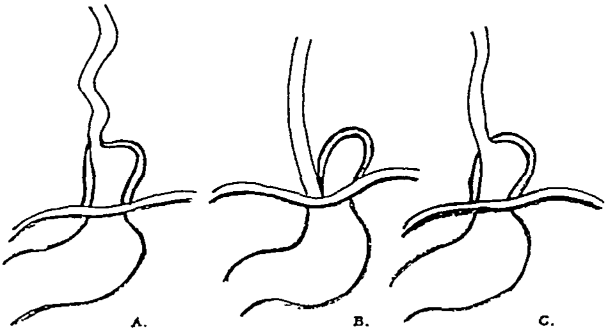

Fig. 3.—Types of esophageal hiatus hernia. *A*, concentric type; *B*, para-esophageal type; *C*, short esophagus type.

esophagus is normally a highly unusual occurrence and not a physiologic one. Normally, "a rather complicated mechanism, in which the esophageal musculature, diaphragm and a valvular mechanism participate, does not permit gastric juice to pass the cardia in reverse direction. The presence of the stomach within the chest cavity may easily upset this mechanism." Frequently repeated and long-continued contact with gastric juice may well lead to esophagitis, peptic ulceration with hemorrhage or even cicatricial stenosis.

According to Kirklin and Hodgson,[8] erosion and ulceration are due to chronic or recurrent venous congestion, and that the pressure exerted by the margin of the hernia on the vascular supply may produce enough congestion to act as a precursor of chronic inflammation of the gastric mucosa.

Dick and Hurst[12] have observed that esophageal ulcer rarely occurs without diaphragmatic hernia.

Frequency of Various Types.—According to Kirklin and Hodgson,[10] a congenital short esophagus with a thoracic stomach (figure 3) is a very rare condition due to failure of the esophagus to maintain its longitudinal growth, which results in failure of the stomach to descend below the diaphragm.

The "shortened esophagus type" represented 26 per cent of their esophageal hiatus hernias. In this type the esophagus, originally of normal length, has been shortened by esophagitis, ulceration and cicatrization which may gradually pull a small portion of the stomach through the esophageal hiatus. This type (Kirklin and Hodgson[10]) is frequently capable of considerable stretching at the time of operation.

In the concentric type of esophageal hiatus hernia there is usually a redundancy in the lower part of the esophagus. This type constituted 66.5 per cent of Kirklin and Hodgson's series.

In the presence of para-esophageal hiatus hernia, part of the stomach herniates through the esophageal hiatus, but the esophagogastric junction remains below the diaphragm and no esophagus is present within the hernia. In the study of Kirklin and Hodgson this type represents 7.5 per cent of esophageal hernias.

Symptoms. — Because many of these hernias are entirely asymptomatic, they may be discovered incidentally at operation or postmortem examination. Pomeranz and Goldstone[13] stated that those which produce symptoms "do so either immediately after birth or remain undiscovered until late in life."

Harrington,[9] in a series of 343 cases of esophageal hiatus hernia, observed the most common symptoms to be pain, abdominal distress, gaseous eructations, vomiting, dyspnea, hemorrhage, weakness, anemia and palpitation, in that order.

Kirklin and Hodgson[10] stated that the most frequently encountered symptom in cases of diaphragmatic hernia is substernal pain. "Other symptoms described are nausea and vomiting, bloating and belching, heartburn and dysphagia and dyspnea."

At the onset the symptoms are usually mild, consisting mainly of epigastric distress that may be referred to the back, the shoulder, the right upper quadrant, the substernal region, the left side of the chest or even the interscapular area. This pain frequently follows a heavy meal; it may even be brought on by eating. It is relieved by vomiting, and, in some instances, by eating, administration of antacids, the upright position or eructation.

Most authors agree that the physical observations are inconstant and are of little value in the diagnosis of esophageal hiatus hernia.

Trueman[7] has remarked, "The size of the hiatus is important as far as the severity of symptoms is concerned. . . . Often a widely dilated hiatus which will permit a freely mobile and distensible herniating portion of the stomach is least commonly associated with symptoms. . . . Conversely, a smaller hiatus capable of incarcerating a portion of the stomach and permitting no distensibility is more likely to produce symptoms. . . . From our experience, cholecystitis is a common associate of hiatus hernia, occurring as it does frequently in older and obese patients; therefore this single finding so often does not tell the whole story and cholecystectomy may fail to relieve the patient if the hernia is undiagnosed and not corrected."

Diagnosis.—Since there are no pathognomonic symptoms and the physical signs are meager, the diagnosis of esophageal hiatus hernia can be established only by roentgen examination, laparotomy or autopsy.

In 1926 Akerlund[14] introduced a special technic that has aided recognition of esophageal hiatus hernia, which previously had been missed in many cases. At the time of the barium meal the roentgenologist should place the patient in the Trendelenberg position and employ some method to increase the intra-abdominal pressure, such as the Valsalva test. Each roentenologist has his favorite method of demonstrating the hernia.

Small esophageal hiatus hernias are commonly observed in routine gastrointestinal series. These are usually asymptomatic. If symptoms are present, they are so vague and indefinite that the clinician is reluctant to ascribe them to the lesion. Even when the hernias are large the symptoms are vague, gradually increasing in severity as more of the stomach becomes incarcerated or as esophagitis and ulceration take place.

Treatment.—When the symptoms are mild and the stomach is the only organ involved the treatment may be conserva-

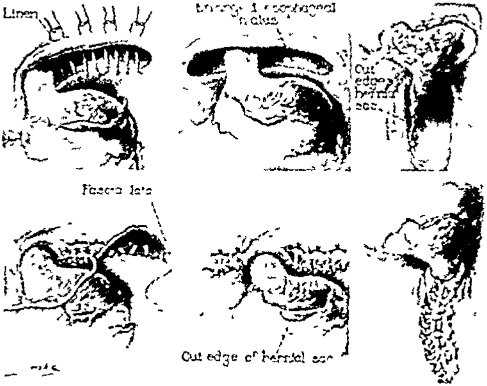

Fig. 4.—The more common types of structurally deficient esophageal openings which permit herniation of stomach into posterior mediastinum; method of repair of each type with fascia lata and linen after removal of hernial sac. (Courtesy of S. W. Harrington, West J. Surg. 44:225-269, 1936.)

TABLE 4.—*Location of Pain; Type of Pain When Recorded*

	Location of Pain												Type of Pain		
Presence or Absence of Hemorrhage; Patients' Ages	Epigastrium	Back	Shoulder	Right Upper Quadrant	Substernal	Left Thorax	Left Arm	Interscapular	Left Upper Quadrant	Lumbar	Left Lower Quadrant	Right Lower Quadrant	Intermittent	Colichy	Continuous
Hemorrhage; over 60	12	1	4	2	1	1	2			1			4	1	2
Hemorrhage; under 60	7	5	1	2	1	2		2				1	3		1
No hemorrhage; over 60	5	1	1	1	2								2	1	1
No hemorrhage; under 60	10	4	1	1	1	1	2	1	2		1		3	6	2
Totals	34	11	7	6	5	4	4	3	2	2	1	1	12	8	6
Per cent	80.9	26.2	16.7	14.3	11.9	9.5	9.5	7.1	4.8	4.8	2.38	2.38	28.6	19.05	14.3

TABLE 5.—*Symptoms Other Than Pain*

Presence or Absence of Hemorrhage; Patients' Ages	Vomiting	Hematemesis	Weight Loss	Dysphagia	Melena	Nausea	Weakness	Dyspepsia	Anemia	Constipation	Diarrhea	Fainting	Bright red blood in stool	Palpitation	Bright red blood in vomitus	Cyanosis	Shock	Dyspnea
Hemorrhage; over 60	8	10	6	3	8	5	6	2	5	5	3	4	3	1	2	1		7
Hemorrhage; under 60	7	8	2	3	7	2	3	4	4	2		2	2					2
No hemorrhage; over 60	5		3	5		3	2	1	2		1					1		3
No hemorrhage; under 60	4		5	4		5	3	6		3	3			2	2			5
Totals	24	18	16	15	15	15	14	13	11	10	7	6	5	3	2	2	1	17
Per cent	57.14	42.9	38.1	35.7	35.7	35.7	33.3	30.9	26.2	23.8	16.7	14.3	11.9	7.1	4.8	4.8	2.38	40.5

tive. Weight reduction is of chief importance in medical management, in order to reduce intra-abdominal pressure. Many patients are relieved in this way, as well as by small, easily digested meals and by avoidance of stooping or assuming the recumbent position too soon after meals.

Phrenicotomy may be used as an aid to medical palliation when radical surgical treatment is contraindicated because of the advanced age and/or the poor physical condition of the patient.

Left-sided phrenicotomy has occasionally partially relieved the symptoms by paralyzing the corresponding side of the diaphragm. In this way the crura of the hiatus are relaxed and thus the possibility of incarceration is reduced, or, if incarceration is present, it is completely relieved if the stomach is not fixed. This procedure is not applicable to hernia when a large portion of the stomach is in the thorax, exerting marked pressure on the heart and lungs, nor is it applicable when the bowel is involved, because of the possibility of intestinal obstruction.

Pickhardt and Rafsky[15] used phrenic crush in the treatment of 29 elderly persons, with decided improvement in 13 cases, improvement with some residual symptoms in 15 and no improvement in 1.

The operative procedure most frequently used consists of reduction of the herniated contents into the abdomen, combined with some type of plastic repair of the hernial opening.

TABLE 6 —*Methods of Obtaining Relief from Pain*

Presence or Absence of Hemorrhage Patients Ages	Vomiting	Food	Antacids	Sitting Up	Eructation
Hemorrhage, over 60	3	3	2	2	1
Hemorrhage, under 60	5	5	3	1	1
No hemorrhage over 60	2				
No hemorrhage under 60	2	3	3	2	1
Totals	12	11	8	5	3
Per Cent	28 6	26 2	19 1	11 9	7 1

Complete agreement has never been reached as to the method of approach Sauerbruch, one of the leading German surgeons, favors closing the defect through thoracotomy Harrington, an equally eminent surgeon (Mayo Clinic), has had an unparalleled experience with this condition and favors the abdominal approach despite the fact he is a master thoracic surgeon (Figs 4 and 5) His reason is that it permits proper exploration of the upper part of the abdomen and correction of any additional pathologic conditions, such as gallbladder disease or a stenosing duodenal ulcer

Those who use the abdominal approach prefer it because they wish to avoid the risk of thoracic complications and are convinced that lesions in the abdominal viscera can be handled better

Cohn and Heaton[10] have treated esophageal hiatus hernia in 3 cases by (a) widening the esophageal hiatus (b) removing the hernial sac, (c) cutting the strictures of the omentum and lesser curvature until the stomach lies freely in the chest and (d) fixing the stomach at its new level The results were good This idea occurred to them after they observed that patients with thoracic stomachs were asymptomatic after esophageal resection

Brewer and Dolley[1] supported the evidence that these patients are asymptomatic by saying "Actually, unless the patient has been informed as to the operative procedure used, in practically every instance, he will not suspect that his stomach rests high in the thoracic cavity "

This is a new procedure for the treatment of hiatus hernia that deserves further evaluation, as it may well prove advantageous in certain cases, especially those in which the esophagus is shortened

Sauerbruch and Sweet are two prominent surgeons who prefer the thoracic approach In their opinion, the excellent exposure and ease of operation compensate for the added effort involved in making this incision

Sweet[11] uses a purse string plication suture on the peritoneal sac (Fig 6), since he does not find it necessary to open or remove the sac in the average case

If the patient is obese or if any difficulty is encountered in reducing the viscera through the esophageal hiatus, Sweet makes a counterincision (Fig 6*d*) in the

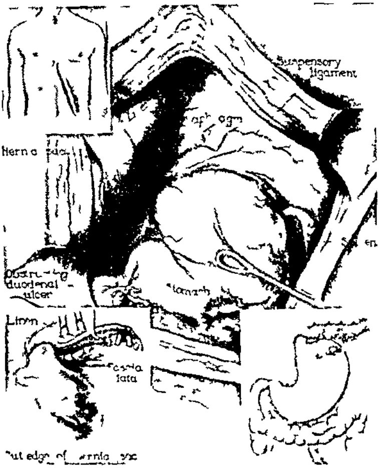

Fig 5 Herniation of entire stomach into posterior mediastinum with associated obstructing duodenal ulcer Left lower insert illustrates closure of enlarged esophageal hiatus with fascia lata and linen Right lower insert illustrates posterior gastroenterostomy performed for duodenal ulcer at same operation through abdominal approach (Courtesy of S W Harrington, West
1 225 269,

TABLE 7.—*Laboratory Data: Roentgen Classification of Hernias*

Treatment; Presence or Absence of Hemorrhage; Patients' Ages	Hernia Not Diagnosed by Roentgenogram	Hernia Diagnosed by Roentgenogram	Size of Hernia Stated	Average Size Centimeters Where Stated	Hernias Classified as Large	Hernias Classified as Small	Reducible Hernias	Nonreducible Hernias	Concentric Hernias	Congenital Short Esophagus	Para-Esohageal Hernia	Type Not Stated	Occult Blood in Stool	Occult Blood in Vomitus
Operation; over 60; hemorrhage		13	9	7	2	1	1	4	11	1	1	0	7	0
Operation; under 60; hemorrhage	1	8	4	5.5	1	3	3	0	6	1	0	1	4	2
Operation; over 60; no hemorrhage	2	6	3	4.33	0	3	2	0	6	0	0	0	0	0
Operation; under 60; no hemorrhage	2	9	9	3.94	0	2	4	1	8	1	0	1	1	0
Totals	5	37	25	5.34	3	9	10	5	31	3	1	2	12	2
Per cent	11.9	88.7	59.5		7.1	21.5	23.8	11.9	73.8	7.1	2.4	4.8	28.6	4.8

diaphragm, through which he inserts his hand to maintain reduction of the stomach and other viscera while the esophageal hiatus is being repaired.

Sweet is of the opinion that "the use of the supradiaphragmatic approach in the treatment of esophageal hiatus hernia, converts what in the majority of cases would be a difficult and formidable procedure into one that can be accomplished with ease and simplicity. . . . Handling of any of the abdominal viscera except those within the sac is avoided; the exposure of the operative field is wide and direct, the freeing of the sac is readily accomplished; and structures that are sutured are easily seen and dealt with."

Phrenic crush is accomplished at the time of operation in many cases to insure temporary paralysis of the diaphragm and to encourage firm healing of the sutured parts.

Results.—During the six and one-half year period from July 1, 1943, to Dec. 31, 1949, there were 370, 192 admissions to the Los Angeles County General Hospital (excluding births in the hospital). During the same period there were 185 confirmed cases of diaphragmatic hernia. Ten of the lesions were traumatic hernias, 10 were congenital hernias and 165 were esophageal hiatus hernias. Forty-two, or 25.5 per cent, of the last-mentioned group were operated on and constitute the material used in this study.

The age of the patients varied from 6 weeks to 81 years (Table 1), half being under 60 and half over 60 years of age. Thirty-four patients (81 per cent) were past the age of 50, and 39 (93 per cent) were past 40. The average age of the entire 42 patients was 59 years.

There was a slight preponderance of male over female patients.

In 22 cases (52.38 per cent) bleeding was evidenced macroscopically evident or was revealed by chemical tests.

Thirty-five and seven-tenths per cent of the patients were obese; 40.5 per cent were of normal build; 16.7 per cent were thin, and 7.1 per cent were emaciated (Table 2). Fifteen patients (35.7 per cent) had lost weight, the amount varying from 10 to 40 pounds (4.5 to 18.1 Kg.), the average being 25.3 pounds (11.4 Kg.). Some of the normal or thin patients were no doubt obese prior to this loss of weight. In other cases weight loss was mentioned but no definite amount given, so it is doubtful whether these patients had lost much weight.

The concentric type of hernia was by

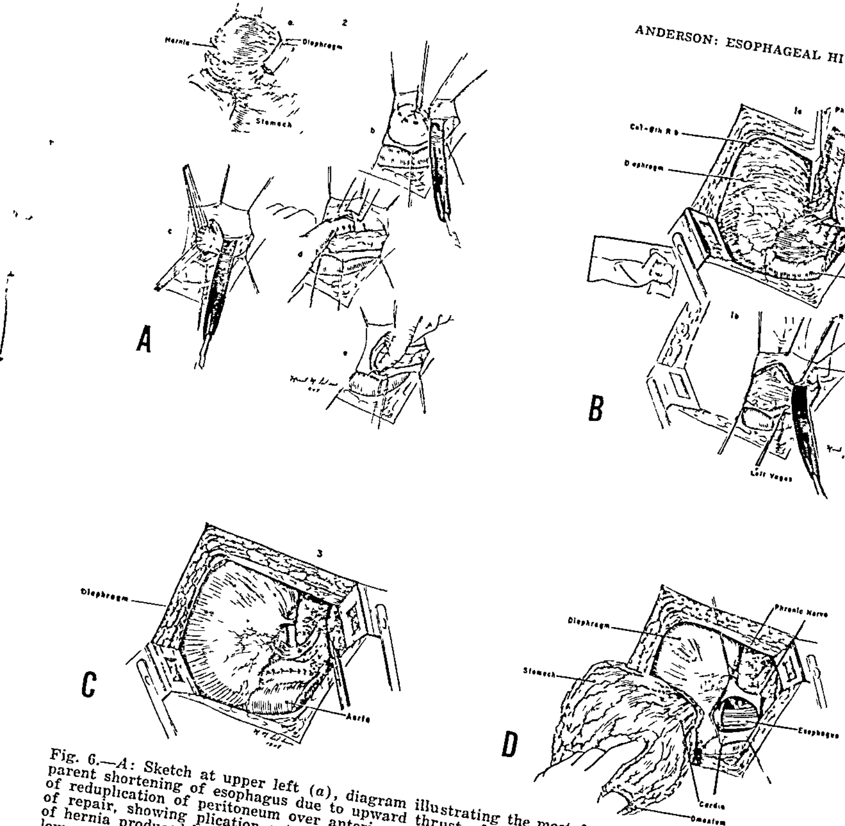

Fig. 6.—*A:* Sketch at upper left (*a*), diagram illustrating the most frequent type of hernia, with apparent shortening of esophagus due to upward thrust of herniated portion of stomach. Sac consists of reduplication of peritoneum over anterior aspect of herniated stomach. Upper right (*b*), beginning of repair, showing plication sutures used to enfold peritoneal sac. Center left (*c*), complete reduction of hernia produced by obliteration of sac, with plication sutures tied but not yet cut. Center right and lower right (*d* and *e*), placement of sutures used to narrow esophageal hiatus. *B:* Upper sketch (*a*), exposure of operative field obtained by incision through left hemithorax, with excision of eighth rib. Lower sketch (*b*) dissection of hernia, lower portion of esophagus and margins of esophageal hiatus after incision of mediastinal pleura. *Inset,* direction of incision of chest wall. *C,* view of left hemithorax before closure of mediastinal pleura. Suture of opening in mediastinal pleura shown after completion of repair. *D,* diagram illustrating the method suggested in cases in which enormous size of hernia makes it difficult to maintain reduction during repair. Stomach and omentum have been pulled out through a counterincision in diaphragm. After repair of hernia, stomach and omentum will be replaced in abdomen and opening in diaphragm closed. (Courtesy of Richard H. Sweet, New England J. Med. 238:629-653, May 6, 1948.)

far the most common, making up 78.6 per cent of the operative group, while the short esophagus type constituted 19 per cent and the paraesophageal type only 2.4 per cent (Table 3).

Pain was present in nearly all cases,

being located in the epigastrium in 80.9 per cent. Other less frequent locations were in the back (26.2 per cent); shoulder (16.7 per cent); right upper abdominal quadrant (14.3 per cent); substernal or precordial areas (11.9 per cent); left side of thorax, 9.5 per cent; left arm, 9.5 per cent, and interscapular area 7.1 per cent (Table 4).

The type of pain was recorded as intermittent in 28.6 per cent, colicky in 19 per cent and continuous in 14.3 per cent of the cases. In 38 per cent there was no mention of the type of pain.

Symptoms other than pain were present in the following order of frequency: vomiting, 57.4 per cent; hematemesis, 42.9 per cent; weight loss, 38.1 per cent; dysphagia, 35.7 per cent; melena, 35.7 per cent; nausea, 35.7 per cent; anemia, 26.2 per cent; constipation, 23.7 per cent; diarrhea, 16.7 per cent; fainting, 14.3 per cent; bright red blood in the stool, 11.9 per cent; palpitation, 7.1 per cent; cyanosis and bright red blood in the vomitus, each 4.8 per cent. Dyspnea was present in 40.5 per cent of the cases (Table 5).

Relief from pain was obtained by vomiting in 28.6 per cent; by eating in 26.2 per cent; by the administration of antacids in 19.1 per cent; by the upright position (either sitting or standing), in 11.9 per cent, and by belching in 7.1 per cent (Table 6).

Physical abnormalities in the chest were minimal in most cases, rales being present in only 21.4 per cent and emphysema in 9.5 per cent. Abdominal physical signs of diaphragmatic hernia were somewhat more constant and consisted of epigastric tenderness in 35.7 per cent, tenderness of the right upper abdominal quadrant in 19.1 per cent, left lower quadrant tenderness in 7.1 per cent and left upper quadrant tenderness in 4.8 per cent.

An effort was made to determine whether the symptom of bleeding could be correlated with the type of pain, but no correlation was found. There was also no correlation between the symptom of hemorrhage and the method of obtaining relief from pain.

Laboratory Work.—Occult blood was observed in the stools in 28.6 per cent of the patients and in the vomitus in 4.8 per cent. These figures include only cases in which the presence of blood was proven chemically. Cases of gross hematemesis, melena and bright red blood in the stool or vomitus are not included unless a chemical test was performed, which it frequently was not.

Roentgen examination established or confirmed the diagnosis of esophageal hiatus hernia in 88.1 per cent of cases but gave negative or questionable results in 11.9 per cent of the proved cases.

The average size of the hernia as determined by roentgen examination in 25 (59.5 per cent) cases was 5.34 cm. In 3 cases (7.1 per cent) the hernia was termed large, and in 9 (21.5 per cent) it was called small, though no definite size was given (Table 7).

Roentgenologically the hernia was said to be reducible in 23.8 per cent and nonreducible in 11.9 per cent. The concentric type (Fig. 7) was diagnosed by roentgenogram in 73.8 per cent, the short esophagus type (Fig. 8) in 7.1 per cent and the paraesophageal type (Fig. 9) in 2.38 per cent. In 4.8 per cent the type was not stated (Table 7).

Confusing Diseases.—As will be noted in Table 8, the diseases most likely to be confused with esophageal hiatus hernia in the order of frequency are: peptic ulcer, gastric ulcer, gastrointestinal malignant tumor, duodenal ulcer, cholecystitis, malignant gastric lesions, gastritis and carcinoma of the esophagus.

Associated Diseases.—The more common associated diseases are cholecystitis (14.3 per cent), secondary anemia (14.3 per cent), chronic alcoholism (11.9 per cent), duodenal ulcer (9.5 per cent), cardiospasm (9.5 per cent), cholelithiasis (7.1 per cent), gastritis (7.1 per cent), hypertensive cardiac disease (7.1 per cent) and carcinoma of the esophagus (4.8 per cent.) Pancreatitis, gastric ulcer, peptic ulcer, angina pectoris, coronary thrombosis, esophageal varices, bronchial asthma and psychoneurosis were each associated with esophageal hiatus hernia in 1 case (Table 9).

Type of Incision.—A thoracic incision was used in 22 cases. The interspace used varied from the sixth to the ninth; the eighth was used 14 times, the seventh 6 times, and the sixth and ninth each only once.

The abdominal approach was used in 18 cases; the left subcostal, being the most popular, was used 7 times; by the left rectus, 4 times; the right rectus, 3 times; the rectus (side not stated), twice; the transverse, once; and the Carter incision, once.

A phrenic crush was done at the time of operation in 26.2 per cent of the cases. It was performed prior to operation in 4.8 per cent and after diaphragmatic repair in 4.8 per cent of cases. A phrenic crush was the only surgical intervention in 3 cases (7.1 per cent) and in 1 instance this was followed by a phrenic avulsion one month later.

Operative Data.—The presence or absence of a sac was not mentioned in 25 cases (59.5 per cent). A sac was present in 12 (28.6 per cent), and absent, according to the record, in 2 (4.8 per cent).

No doubt the sac was removed in many more instances, but in only 10 cases (23.8 per cent) was a definite statement made that the hernial sac had been removed.

The contents of the hernial sac was the stomach in every instance. Other viscera were not present in the sac in this group of 42 operative cases.

Types of Suture and Suture Material.—As will be noted in Table 10, the most popular suture material was silk (71 per cent), followed by cotton (14 per cent). Catgut was used in only 1 instance (2 per cent). Fascia lata was not used as a suture material in a single case.

Interrupted sutures were used in 25 cases (59.5 per cent), mattress sutures in 10 (23.8 per cent), and continuous sutures in only 1 (the same case in which catgut sutures were used). Imbrication of the flaps, which is stressed by Harrington,[11] was used in only 4 cases (9.5 per cent).

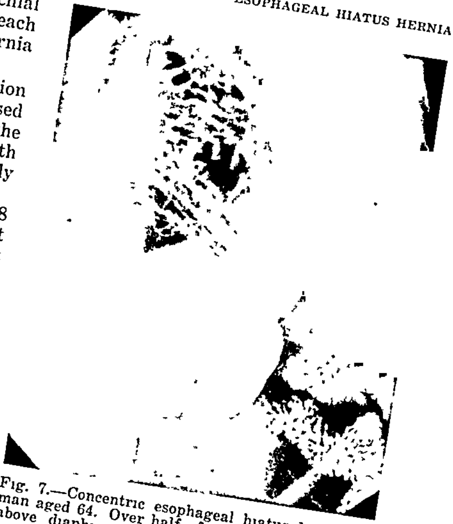

Fig. 7.—Concentric esophageal hiatus hernia in man aged 64. Over half of stomach may be seen above diaphragm. (Courtesy of Julius Bauer, M. D.)

Operative Results.—The operative results (Table 11) were far from ideal. Only 30.95 per cent of the patients were cured and 11.9 per cent improved, making a total of 42.85 per cent who were benefited by the operation. The mortality rate was 19.05 per cent, a figure much higher than one would expect. There was a 23.80 per cent recurrence rate, and 14.29 per cent of the patients were unimproved.

Evisceration occurred on the fifth postoperative day in 1 patient whose hernia had been repaired through a subcostal incision. This was repaired immediately but was followed by death.

Recurrences.—Recurrences occurred in 10 patients (23.8 per cent). One of these had a second recurrence, so that there was a total of 11 recurrences in 10 patients. Six patients were obese and 4 were of

TABLE 8.—*Confusing Diagnoses Not Confirmed by Further Workup*

Treatment; Presence or Absence of Hemorrhage; Patients' Ages	Peptic Ulcer	Gastric Ulcer	Gastrointestinal Malignant Tumor	Duodenal Ulcer	Cholecystitis	Gastric Malignant Tumor	Gastritis	Carcinoma of Esophagus	Intestinal Obstruction	Esophageal and Gastric Varices	Cirrhosis	Pancreatitis	Cardiospasm	Blood Dyscrasia	Cholelithiasis	Coronary Thrombosis	Pernicions Anemia	Hypertensive Heart Diseases	Abdominal Aneurysm	Diverticulitis
Operation; over 60; hemorrhage	5	2	3	2	1	2	1	1		1	1			2			1	1	1	1
Operation; under 60; hemorrhage	3	3		1			1			1	1									
Operation; over 60; no hemorrhage	2		2	1	1	2	1	2	1				1							
Operation; under 60: no hemorrhage	4	2	1	1	3		1	1	2	1	1	2	1		1	1				
Totals	14	7	6	5	5	4	4	4	3	3	3	2	2	2	1	1	1	1	1	1

TABLE 9.—*Associated Diseases*

Treatment; Presence or Absence of Hemorrhage; Patients' Ages	Cholecystitis	Secondary Anemia	Chronic Alcoholism	Cardiospasm	Duodenal Ulcer	Cholelithiasis	Hypertensive Heart Disease	Gastritis	Carcinoma of Esophagus	Pancreatitis	Gastric Ulcer	Peptic Ulcer	Angina	Coronary Thrombosis	Esophageal or Gastric Varices	Psychaoneurosis	Bronchial Asthma	Intestinal Obstruction
Operation; over 60; hemorrhage	1	2	1	1	1		2					1	1	1	1			
Operation; under 60; hemorrhage	2	4	3		3	2			1	1						1		
Operation; over 60; no hemorrhage	1			1					1		1							
Operation; under 60; no hemorrhage	2		1	2		1	1	3									1	
Totals	6	6	5	4	4	3	3	3	2	1	1	1	1	1	1	1	1	0
Per cent	14.3	14.3	11.9	9.5	9.5	7.1	7.1	7.1	4.8	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	

normal build. They were all over 50 years of age, and 7 were over 60. There were 6 women and 4 men.

The abdominal approach was used for 6 and the thoracic approach for 4 of these patients. Interrupted silk sutures were used in 9 patients and silk mattress sutures in 1, this being the only patient in whom the flaps were imbricated. A phrenic crush was performed at the time of operation in 4 patients and after operation in 2, in an unsuccessful attempt to alleviate the persistent symptoms.

Only a partial repair was attempted in 1 case, as the esophageal hiatus was stated to be continuous with the aortic hiatus, a condition which Harrington[9] says usually does not exist.

A bilateral vagotomy was performed at the time of operation in 2 patients, 1 of whom at operation showed evidence of recent perforation of an esophageal ulcer.

The interval of time between repair and a proved recurrence varied from thirteen days to seven years in the eleven recurrent hernias (13, 29, 30, 39, 42, 67, 116, 167, 227, 452, and 2,555 days respectively). Leaving out the last 2 cases, which were certainly much longer than the average, the average time interval from repair to known recurrence was fifty-eight days. In all cases in which check roentgenograms were taken soon after operation the recurrence was demonstrated within the first four to six weeks.

The average size of the recurrent hernia was somewhat smaller (4.99 cm.) than the average size of the original hernia (6 64 cm) in the 11 recurrences.

Multiple Repairs. — Multiple repairs were performed in three patients. The first, a 56-year-old woman, underwent an exploratory operation at St. Josephs Hospital in Burbank in July 1946. The abdominal approach was used. The patient was told that a repair could not be done because the liver was in the way. One month later (August 27) this patient was reoperated on at the Los Angeles County General Hospital. The seventh rib was resected. The hiatus was closed with several interrupted chromic sutures, and a phrenic crush was done just above the diaphragm. A roentgenogram taken one month later revealed a recurrence. A year later (Aug. 12, 1947) the same surgeon did a repair through the bed of the sixth rib, using interrupted silk sutures, which resulted in a cure.

The second case was that of a man aged 61. His hernia was repaired on Dec. 12, 1946, by means of a right rectus incision, with interrupted No. 4 silk sutures. A roentgenogram taken six weeks later (Jan. 24, 1947) demonstrated a recurrence. The second repair was performed with interrupted silk sutures three years later (Nov. 10, 1949) through a thoracic approach. The patient died on following day of cardiorespiratory collapse and shock.

The third patient, a man aged 55, underwent repair of his hernia on Feb. 20, 1946. A left subcostal incision was employed. Interrupted silk sutures were used. The stomach was anchored to the diaphragm with one silk suture. The

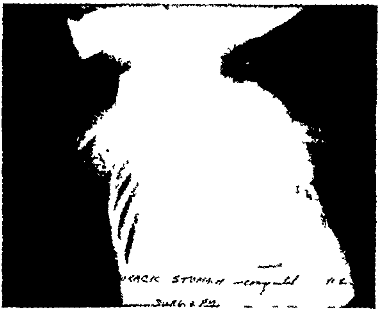

Fig. 8.—Congenital short esophagus in Japanese infant 1 year old. Roentgenogram shows fluid level in portion of stomach which is above the diaphragm.

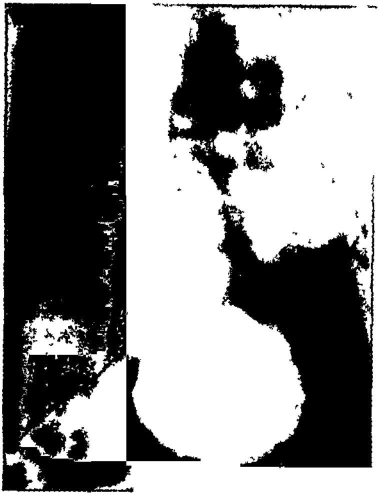

Fig. 9 —Para-esophageal hiatus hernia in a Mexican infant aged 2 months Roentgenogram shows nonreducible para-esophageal hernia 1.5 cm proximal to the cardia of the stomach.

same type of pain recurred within a month, and a film taken on March 29 showed recurrence of the hernia. The second repair was performed fifteen months later (June 17, 1947) after the seventh rib had been resected. Mattress sutures of medium silk were used to repair the diaphragm. A film taken one month later (July 17, 1947) revealed a small recurrence.

Esophagoscopic Study. — Esophagoscopic examination was performed on 22 (52.38 per cent) of the patients and revealed an ulcer of the esophagus in 4 instances (9.5 per cent). A short esophagus was observed esophagoscopically in 12 (22.6 per cent). The average distance to the lesion was 35.27 cm. (range, 28.5 to 42 cm.) in the 9 cases in which this distance was mentioned. Stricture of the esophagus was observed by roentgen or esophagoscopic means or both, in 13 patients (30.9 per cent).

Adhesions were observed in 5 patients at the time of operation, as follows: between the stomach and the liver; between the abdominal wall and the colon; between the diaphragm and the pericardium; between the diaphragm and the pleura, and between the diaphragm and the colon. In 6 patients adhesions were present between the stomach and the diaphragm.

Exploration Without Repair.—Exploration without repair of the hiatus hernia was performed in 3 cases. In the first of these repair was not done because poor anesthesia, poor relaxation and obesity made it impossible.

In the second case the spleen was twice the normal size. The gastro-epiploic vessels and the vessels in the gastrocolic omentum were three to four times the normal caliber, and there were large venous channels along the lesser curvature of the stomach, extending through the esophageal hiatus. These vessels and the coronary vein were 1 cm. in diameter, and it was assumed that these esophageal varices were responsible for the bleeding. In addition, there was a 5-cm. aneurysm of the aorta that projected through the lesser omentum just below the diaphragm. A biopsy specimen of the liver was taken and the abdomen was closed.

The esophageal hiatus in the third case admitted the tips of three fingers. "Because of the small size of the hernia, and as the relaxation of the patient was inadequate, it was decided that no repair of the defect be done at this time."

Bilateral Vagotomy.—In addition to repair of the hiatus hernia, a bilateral vagotomy was performed in 6 cases, with 2 cures, 2 recurrences, 1 patient improved and 1 unimproved. A recent perforation of an esophageal ulcer was observed in 1 of the cured patients. In this case a gastroenterostomy was done in addition to the bilateral vagotomy and hiatus repair. A recent rupture of the esophagus (following esophagoscopic study) was observed in the other cured patient.

In 1 of the 2 patients with recurrent hernias repair was done shortly after perforation of an esophageal ulcer.

The improved patient had a duodenal ulcer that ruptured into the gall bladder. In addition to the hiatus repair and bilateral vagotomy, a cholecystectomy was performed.

The unimproved patient had undergone appendectomy at the time of the bilateral vagotomy and hiatus repair and, one year later, gastroenterostomy and excision of a duodenal diverticulum which showed point tenderness to palpation on fluoroscopic examination. This patient is chronically alcoholic.

Esophageal Resection. — Resection of the esophagus was performed in 4 cases, with 3 deaths and 1 cure. Of the patients who died, 1 had an uncomplicated hernia, 1 had a rupture of an esophageal ulcer discovered at operation, and 1 died of postoperative rupture of the stomach and pneumonia. The case of the patient who was cured was uncomplicated.

Carcinoma.—Carcinoma was observed in 2 cases. In 1 it occurred in the cardia and the lower part of the esophagus and was associated with lymph node and peritoneal metastasis; the other was an inoperable adenocarcinoma (Grade II) of

TABLE 10—*Analysis of Surgical Observations and Methods Used in Surgical Repair*

Treatment Presence or Absence of Hemorrhage, Patients Ages	Phrenic Injection at Operations	Phrenic Crush at Operation	Phrenic Crush After Operation	Phrenic Crush Before Operation	Silk Suture	Cotton	Catgut Suture	Continuous Suture	Interrupted Suture	Mattress Sutures	Imbrication	Sac Present	Sac Absent	Sac Not Mentioned	Sac Removed (Definitely Stated)	Stomach Fixed to Diaphragm	Esohagus Fixed to Diaphragm	Exposure Only—No Repair
Operation, over 60 hemorrhage		4	2	1	9	3			10	1		6		6	5	2		2
Operation, under 60 hemorrhage		3			6	2			5	3		2		6	2		1	
Operation over 60 no hemorrhage		1			7				5	2	1	1	1	6	1	1	1	1
Operation under 60 no hemorrhage		3		1	8	1	1	1	5	4	3	3	1	7	2	1	1	
Totals	0	11	2	2	30	6	1	1	25	10	4	12	2	25	10	4	3	3
Per cent	0	26 2	4 8	4 8	71 4	14 3	2 4	2 4	59 5	23 8	9 5	28 6	4 8	59 5	23 8	9 5	7 1	7 1

TABLE 11—*Results of Treatment*

Treatment Presence or Absence of Hemorrhage, Patients Ages	Cured	Recurred	Died	Unimproved	Improved
Operation over 60 hemorrhage	2	7	2	2	
Operation, under 60 hemorrhage	2	1	1	2	3
Operation over 60 no hemorrhage	3		3	2	
Operation under 60 no hemorrhage	6	2	2		2
Totals	13	10	8	6	5
Per cent	30 95	23 8	19 05	14 3	11 9

the cardiac end of the stomach This patient had been operated on six months earlier for a ruptured gastric ulcer

COMMENT

Esophageal hiatus hernia is a disease of later life Thirty-four, or 81 per cent, of our patients were past the age of 50, 39, or 93 per cent, were over 40

In contrast to the findings of Ritvos [18] Bernstein,[8] and Kirklin and Hodgson [10] who recorded a 2 to 1 preponderance of female patients, there was a slight preponderance of male (23) over female (19) patients in our series

Thirty five and seven tenths per cent of our patients were obese, and 40 5 per cent were of normal build

Harrington,[7b] as well as Kirklin and Hodgson[10] considers obesity a predisposing factor in the development of hiatus hernia, the latter drawing attention to the fact that this lesion occurs most frequently in obese middle aged women

The concentric type of hiatus hernia (Fig 7) was present in 78 6 per cent of our operative cases as compared with 66 5 per cent of Kirklin's and Hodgson's[5] series The short esophagus and shortened esophagus types (Fig 8) made up 19 per cent as compared to their 26 per cent The paraesophageal type (Fig 9) accounted for only 2 4 per cent as compared with their 7 5 per cent Considering the size of our series, the figures are quite comparable

The amount of weight lost was given in
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pounds (11.4 Kg.). Loss of weight was mentioned in other cases, but a definite amount was not given or it was questionable whether weight had been lost. The loss of weight was no doubt due to dysphagia, dyspepsia and stricture of the esophagus.

Dyspnea was present in 40.5 per cent of the patients. This is to be expected, considering the average age of the group and the fact that hypertensive and arteriosclerotic heart disease associated with mild cardiac decompensation was present in some instances. The incidence of dyspnea is therefore probably not related to the fact that the patient had an esophageal hiatus hernia.

Roentgen examination is by far the most reliable means of diagnosis, having established or confirmed the diagnosis in 88.1 per cent of cases. Esophagoscopic examination, performed in 22 cases, is a very accurate diagnostic aid and should be used more frequently.

Imbrication of the flaps (Fig. 4) is illustrated by most authors and seems to be a desirable method of repair. Harrington[9b] uses this method routinely and has a very low recurrence rate.

Catgut suture was used in the unsuccessful repair of the diaphragm in 1 case. In 1 other case an unsuccessful repair with catgut sutures had been done prior to entry. It would seem that absorbable sutures have no place in a repair that carries such a high incidence of recurrence. Fascia lata, as illustrated by Harrington,[9b] (Fig. 4), would seem to be a desirable suture material and should be used more frequently.

Fixation of the stomach to the diaphragm was carried out in 4 cases. Denuding the fundus of the stomach and an adjacent segment of the diaphragm followed by approximation with nonabsorbable sutures should provide enough adhesions to prevent some of the recurrences, and deserves further investigation and use.

The recurrence rate varies considerably, depending on whether the operations are performed by a single skilled surgeon or by different surgeons who operate only occasionally on esophageal hiatus hernias.

In analysing the 67 cases at the Massachusetts General Hospital between 1920 and Jan. 1, 1947, Soutter[18] stated that 43 patients were followed less than a year or were not studied roentgenologically. "Of the remaining twenty-four, eighteen had proven recurrences and six had proven reductions by studies taken at least twelve months postoperatively." This gives a recurrence rate of 26.8 per cent as compared with our recurrence rate of 23.8 per cent for 10 patients.

For transthoracic repair Soutter noted a 14 per cent recurrence as compared to our 18.18 per cent, and for abdominal repair he observed a 40 per cent recurrence as compared to our 33.33 per cent.

Harrington[9b] reported 9 recurrences in 430 cases of diaphragmatic hernia (all types), an incidence of 2.1 per cent, and stated that 9 out of 10 recurrences in the entire series of 430 cases were in the esophageal hiatus group. This, no doubt, is because the repair of an abnormally large hiatus of the esophagus is more difficult than complete closure of an abnormal opening in the diaphragm.

Mortality.—There were 8 deaths, 7 of which occurred shortly after operation and 1 that occurred ten months postoperatively and was due to hypernephroma of the kidney with widespread metastasis. Of the deaths that occurred in the immediate postoperative period, 1 was caused by coronary occlusion with myocardial infarction. The operation in this case lasted only one hour and seven minutes, and no difficulty was encountered.

The esophagus was resected in 3 cases, because of stricture, and an esophagogastric anastomosis was performed. In the first case death occurred twenty-four hours after a difficult seven-hour operation and was caused by irreversible shock, hemothorax, bronchopneumonia, pleurisy and mediastinitis. In the second, the patient died three days after an operation lasting three and one-half hours, with necrosis and perforation of the stomach 3 cm. distal to the esophagogastric anastomosis and secondary bronchopneumonia with atalectasis. The third patient died ten days after a five-hour operation, with a perforated peptic esophageal ulcer, bronchopneumonia, shock, acute empyema of the left pleural cavity and mediastinitis.

In a case of simple repair of the diaphragm, death occurred seven days after a two-hour operation and was due to a 2 mm. perforation on the anterior wall of the greater curvature of the stomach, left empyema, organizing pneumonia, pleurisy and bronchitis.

One death occurred five days after a two-hour simple repair of the hernia and was due to bronchopneumonia, pulmonary edema and left lower lobe atelectasis, pyemic left pleural effusion, and chronic pyelonephritis with severely contracted kidneys.

The last patient died one day after a difficult five-hour operation in which the esophagus was perforated in two places and a large amount of blood was lost. Autopsy revealed irreversible postoperative shock, hemothorax and infarction of the middle lobe of the right lung.

Only 4 of these deaths can be attributed to simple repair of esophageal hiatus hernia, as 3 deaths followed esophageal resection for stricture of the esophagus, and 1 patient with an inoperable hypernephroma at the time of operation died ten months after diaphragmatic repair.

Esophageal resection was accomplished in 4 cases, with 75 per cent mortality and one cure. This mortality rate is so high that this procedure should not be performed except by the most skilled surgeons.

Chronic ulceration of the esophagus occurred in 9.5 per cent of cases (4 times in the 22 cases in which esophagoscopic study was done). All of the ulcers occurred at the distal end of the esophagus, in close topographic relationship to the region of the hiatus hernia.

Stricture of the lower end of the esophagus is not an uncommon occurrence and is frequently associated with an ulcer of the esophagus, either active or healed.

SUMMARY

The operative cases at the Los Angeles County Hospital are reviewed for a period of six and one-half years, ending Dec. 31, 1949.

During this period the diagnosis of diaphragmatic hernia was confirmed in the cases of only 185 patients, 10 of whom had traumatic hernias, 10 congenital hernias and 165 esophageal hiatus hernias, 42 of the latter group coming to operation.

Surgical intervention resulted in cure in 30.9 per cent and in improvement in 11.9 per cent. There was an uncorrected mortality rate of 19.05 per cent and a recurrence rate of 23.8 per cent. If the 3 patients who died after esophageal resection for stricture and ulcer of the esophagus are omitted, there is a mortality rate of 11.9 per cent. Fourteen and three-tenths per cent of the patients were unimproved.

Bleeding was present, observable either macroscopically or by means of chemical tests, in 52.4 per cent of the patients.

This is a disease of later life, as 49.9 per cent of the patients were over 60 years of age, 80.8 per cent were over 50, and 64.2 per cent were between 50 and 70.

Concentric esophageal hiatus hernia is the most frequent type (78.6 per cent); the short esophagus type (either congenital or acquired) was second in frequency (19.05 per cent) and the paraesophageal type was least frequent (2.48 per cent).

In this study an attempt was made to see whether there was any correlation between the presence of hemorrhage and the type of body build, the type of hiatus hernia, the type of pain, and the methods of obtaining relief from pain. No correlation was found.

CONCLUSIONS

1. Recurrences can be reduced (a) by imbrication of the flaps as illustrated by

Harrington[9b] but as employed in only 1 of the recurrent cases; (b) by denudination the fundus of the stomach and the adjacent diaphragm and suture of these raw surfaces together, thereby aiding the formation of adhesions between these structures, and (c) by use of nonabsorbable mattress sutures for repair of the diaphragm.

2. Esophageal resection for stricture of the esophagus carried a 75 per cent mortality rate in the 4 cases in which it was used. This might be considerably reduced by substitution of some type of cardioplasty similar to the commonly used Finney pyloroplasty.

3. Transthoracic herniotomy similar to that used by Cohn and Heaton[13] should be given more extensive trial, particularly in cases of congenital short esophagus or in other cases when difficulty is encountered in bringing the stomach into the abdomen.

4. The establishment of operative teams is considered advisable, as this gives the surgeon sufficient experience in handling this condition to lower the mortality rate. Most of the patients in this series were operated on by different surgeons, many of whom had performed only one or two diaphragmatic repairs previously. In some cases it was the surgeon's first repair.

5. The thoracic approach should be used for the repair of esophageal hiatus hernia when possible, as the recurrence rate (18.2 per cent) is about half that observed when the abdominal approach is used (33.3 per cent).

SOMMAIRE

C'est une revue de tous les cas opérés depuis 6½ ans jusqu'au 31 décembre 1949 à The Los Angeles County Hospital. Pendant cette période, on fit le diagnostic de hernie diaphragmatique dans 185 des cas seulement, dont 10 d'origine traumatique, 10 congénitales et 165 par hernie d'hiatus oésophagien. Sur ces 165, on en opéra 42. L'intervention chirurgicale donna une guérison dans 30.9% des cas, et une amélioration dans 11.9% des cas. Il y eut un taux de mortalité de 19.05% Ce taux est incorrect. Si les trois patients morts après résection de l'oésophage pour rétrécissement ou ulcération étaient mis le taux de mortalité serait de 11.9%.

Le pourcentage des récidives est de 23.8% Les non améliorés comptaient 14.3%. L'hémorragie macroscopique ou microscopique était présente dans 52.4% des cas. C'est une maladie d'age avancé, puisque 49.9% des patients étaient au dessus de 60 ans et que 80.8% étaient au dessus de 50 ans. 64.2% étaient entre 50 et 70 ans.

Le type le plus fréquent (78.6%) est la hernie d'hiatus oésophagien; le type d'oésophage court (congénital ou acquis) est la seconde en frequence 19.05%. Le type paraoésophagien est le moins fréquent: 2.4%.

Dans cette étude, on a tenté de trouver un rapport entre la présence d'hémorragie et le genre de taille, le genre de hernie par hiatus, le genre de douleurs et de méthode pour calmer cette douleur. On a pu ètablir aucun rapport.

CONCLUSIONS

1. Le nombre de récidives peut-être diminué par (a) chevauchement des lambeaux (illustration de Harrington) mais employé dans une seule récidive; (b) par dénudation du fundus de l'estomac et de la partie adjacente du diaphragme en suturant les deux surfaces cruentées l'une contre l'autre pour provoquer des adhérences; (c) par l'usage de suture en matelas avec fils non résorbables pour la réparation du diaphragme.

2. La résection de l'oésophage pour Rétrécissement amène un taux de 75% de mortalité (sur 4 cas) on pourrait considérablement diminuer ce taux en pratiquant, uns substitution, une cardioplastie du genre de la pylorographie de Finney.

3. On devrait tenter de pratiquer plus souvent l'herniotomie transthoracique de Cohn et Heaton: surtout lorsque l'oéso-

phage est congénitalement court et dans tous les autres cas où il est difficile de descendre l'estomac dans l'abdomen.

4. On conseille fortement la formation d'une équipe opératoire spécialisée; ce qui donnerait au chirurgien une expérience suffisante pour diminuer le taux de mortalité. Dans cetter série la plupart des patients furent opérés par différents chirurgiens dont plusieurs n'avaient fait qu'une ou deux réparations diaphragmatiques. Dans certains cas c'étaient leur première.

5. La voie d'abord thoracique devrait être employée, lorsqu'il est possible, pour la réparation de hernie par hiatus oésophagien. Parce que le taux de récidive de 18.2% est la moitié seelement due taux de 33.3% trouvé dans la voie d'abord abdominale.

RESUMEN

Se revisan los casos operatorios del Hospital del Condado de Los Angeles por un período de seis y medio años, hasta diciembre 31 de 1949.

Durante dicho período hubo confirmación del diagnóstico de hernia diafragmática en 185 pacientes solamente, de los que presentaban 10 hernias traumáticas, 10 hernias congénitas y 165 hernias del hiato esofágico, babiendo sido operados 42 de este último grupo.

Se obtuvieron con la intervención quirúrgica 30.9% de curaciones y 11.9% de mejorías. Hubo un índice de mortalidad no corregido de 19.05% y un índice de recidiva de 23.8%. Si se omiten 3 pacientes que fallecieron después de resección esofágica por estenosis y úlcera gástrica, el înduce de mortalidad es de 11.9%. No hubo mejoría en 14.3 de los pacientes.

Hubo hemorragia observable macroscópica o químicamente en 52.4 de los pacientes.

Tratándose de una enfermedad de la edad avanzada hubo 49.9% de pacientes mayores de 60 años de edad, 80.8% de mayores de 50 y 64.2% entre 50 y 70.

La hernia del hiato esofágico concéntrico resultó el tipo más frecuente (78.6%); el tipo esófago corto, congénito o adquirido, fué el segundo en frecuencia (19.05%) y el tipo paraesofágico el menos frecuente (2.4%).

En este estudio se intentó observar si existía alguna correlación entre la presencia de hemorragia y el biotipo, el tipo de hernia del hiato, el tipo de dolor y los métodos para obtener alivio del mismo. No se encontró correlación alguna.

CONCLUSIONES

1. Pueden disminuirse las recidivas por: (a) imbricación de los colgajos en la forma ilustrada por Harrington,[11] que fué empleada en sólo 1 de los casos recidivantes; (b) denudación del fondo del estómago y el diafragma adyacente y sutura conjunta de las superficies denudadas, ayudando en consecuencia a la formación de adherencias entre dichas estructuras; (c) uso de suturas de colchonero con hilo no absorbible para la reparación del diafragma.

2. La resección esofágica por estenosis dió un índice de mortalidad del 75% en los 4 casos en que fué usada. Este puede reducirse considerablemente empleando algún tipo de cardioplastia similar a la piloroplastia de Finney usada de ordinario.

3. La herniotomía transtorácica similar a la de Cohn y Heaton[7] se justificaría, más, particularmente en casos de esófago corto congénito o en otros con dificultad para traer el estómago al abdomen.

4. Se considera conveniente el establecimiento de equipos operatorios, pues esto da al cirujano suficiente experiencia para tratar este estado con índice más bajo d emortalidad. Muchos de los pacientes de esta serie fueron operados por diferentes cirujanos, muchos de los cuales solamente habían efectuado una o dos reparaciones diafragmáticas con anterioridad. En algunos casos se trató de la primera reparación diafragmática del cirujano.

5. La vía torácica debe usarse para la

reparación de la hernia del hiato esofágico cuando sea posible, dado que el índice de recidiva (18.2%) es aproximadamente la mitad del observado cuando ha sido usada la vía abdominal (33.3%).

ZUSAMMENFASSUNG

Es liegt ein Bericht ueber die am Los Angeles County Hospital innerhalb von 6½ Jahren bis zum 31. Dezember 1949 operativ behandelten Faelle vor.

In diesem Zeitabschnitt wurde die Diagnose einer Zwerchfellhernie in nur 185 Faellen bestaetigt. Zehn davon waren traumatisch, zehn angeboren, und 165 waren Hernien des Hiatus oesophagi. Von der letzten Gruppe kamen 42 zur Operation.

Der chirurgische Eingriff fuehrte in 30.9% der Faelle zur Heilung und in 11.9% zu einer Besserung. Die korrigierte Sterblichkeitsquote betrug 19.05%, und zu Rueckfaellen kam es in 23.8%. Nimmt man drei Kranke, die nach Oesophagusresektion wegen Verengung und Geschwuers der Speiseroehre starben, aus, so sinkt die Sterblichkeitsquote auf 11.9%. 14.3% der Kranken waren ungebessert.

Makroskopisch oder chemisch nachgewiesene Blutungen traten in 52.4% der Kranken auf.

Die Krankheit betrifft Menschen des spaeteren Lebensalters. 49.9% der Kranken waren ueber sechzig, 80.8% ueber fuenfzig und 64.2% zwischen fuenfzig und siebzig Jahre alt.

Am haeufigsten kommt die Form der konzentrischen Hernie des Hiatus oesophagi (78.6%) vor; es folgt der Typus des (angeborenen oder erworbenen) kurzen Oesophagus (19.05%) und schliesslich die paraoesophagale Form (2.4%).

In der vorliegenden Arbeit wurde versucht, eine Beziehung zwischen dem Auftreten von Blutungen und dem Koerperbau, der Form der Hiatushernie, der Art des Schmerzes und der Methode der Schmerzbefreiung aufzudecken. Es stellte sich heraus, dass keine derartige Korrelation besteht.

SCHLUSSFOLGERUNGEN

1. Das Auftreten von Rueckfaellen kann vermindert werden (a) durch das dachziegelfoermige Uebereinanderlegen der Krempen, wie es von Harrington[11] dargestellt, aber in den vorliegenden Faellen nur einmal angewandt wurde; (b) durch Zusammennaehen der rohen Oberflaechen des entbloessten Magenfundus und des anliegenden Zwerchfells, wodurch die Bildung von Verwachsungen zwischen den beiden Strukturen gefoerdert wird, und (c) durch die Verwendung von nicht absorbierbaren Matratzennnaehten bei der Wiederherstellung des Zwerchfells.

2. Die in vier Faellen wegen Speiseroehrenverengung ausgefuehrte Oesophagusresektion wies eine Sterblichkeitsquote von 75% auf. Diese Ziffer koennte wohl erheblich herabgesetzt werden, wenn die Resektion durch irgendeine. Form der Kardioplastik, aehnlich der allgemein angewandten Finneyschen Pyloroplastik, ersetzt wuerde.

3. Der transthorakale Bruchschnitt, aehnlich dem von Cohn und Heaton[7] angewandten, sollte haeufiger versucht werden, besonders in Faellen von kurzem Oesophagus, oder wenn sonst Schwierigkeiten, den Magen in die Bauchhoehle zu bringen, entstehen.

4. Das Aufstellen von Operationsmannschaften wird fuer ratsam gehalten, da auf diese Weise dem Chirurgen Gelegenheit gegeben wird, Erfahrungen mit solchen Faellen zu sammeln und die Sterblichkeitsziffer zu verringern. Die meisten Krankender vorliegenden Serie wurden von verschiedenen Chirurgen operiert, von denen viele nur ein-oder zwei mal vorher eine Wiederherstellung des Zwerchfells ausgefuehrt hatten. In manchen Faellen handelte es sich sogar um die erste Erfahrung des Chirurgen.

5. Fuer die Beseitigung des oesophagalen Hiatusbruches sollte wenn moeglich der thorakale Zugangsweg benuetzt werden, da dieser nur etwa halb so viele Rueckfaelle aufweist (18.2%), als beim Zugang vom Bauch aus beobachtet werden (33.3%).

RIASSUNTO

I casi operati al Los Angeles County Hospital sono stati controllati per un periodo di 6 anni e mezzo, fino al 31 dicembre 1949

Durante tale periodo la diagnosi di ernia diaframmatica fu confermata solo in 185 pazienti, in 10 dei quali era traumatica, in 10 congenita e in 165 dello Hiatus esofageo, di quest'ultimo gruppo 42 pazienti furono sottoposti a intervento

L'intervento chirurgico porto alla guarigione nel 30,9% dei casi e al miglioramento nell'11,9% Si ebbe una mortalita operatoria globale del 19,5% e il 23,8% di recidive Se si escludono 3 pazienti che morirono dopo resezione esofagea per stenosi o ulcera dell'esofago, la mortalita si abbassa allo 11,9% Il 14,3% degli operati non ebbe alcun miglioramento

Nel 52,4% dei casi vi era perdita di sangue macroscopica o chimica

L'affezione e caratteristica dell'eta avanzata, il 49,9% dei pazienti aveva piu di 60 anni di eta l'80,8% piu di 50 e il 64,2% era era fra i 50 e i 70 anni

L'ernia concentrica dello hiatus esofageo fu la varieta piu frequente (78,6%), la varieta a 'esofago breve" (congenita o acquisita) occupava il secondo posto (19,05%), la varieta paraesofagea fu la piu rara (2,4%)

Lo studio e stato condotto allo scopo di stabilire se vi fosse qualche rapporto fra la presenza dell'emorragia e il tipo somatico del paziente, la varieta di ernia dello hiatus, il tipo di dolore e i metodi per ottenere la cessazione del dolore

Non e stato dimostrato alcun rapporto

CONCLUSIONI

1 La recidiva puo essere evitata (a) mediante l'embricazione dei lembi secondo il metodo di Harrington, usato solo in uno dei casi recidivi, (b) mediante denudamento del fondo dello stomaco e del diaframma attiguo, con successiva sutura delle due superfici cruente provocando cosi la formazione di aderenze fra esse, e (c) mediante l'uso di suture da materassaio non assorbibili sul diaframma

2 Si esegui resezione esofagea per stenosi dell'esofago in 4 casi, con il 75% di mortalita Questa potrebbe venire considerevolmente ridotta usando qualche metodo di cardioplastica tipo la solita piloroplastica di Finney

3 L'erniotomia transtoracica secondo il metodo di Cohn e Heaton potra avere piu frequenti applicazioni specie nei casi di esofago breve congenito o nei casi in cui si incontrano difficolta nel riporre lo stomaco nell'addome

4 Si considera opportuna la formazione di squadre operatorie, onde formare chirurghi sufficientemente esperti nella cura di questa affezione per abbassare la mortalita operatoria La maggior parte dei pazienti presentati fu operata da diversi chirurghi, che per lo piu avevano eseguito in precedenza soltanto uno o due operazioni per ernia diaframmatica In qualche caso nessuna

5 Nella cura dell'ernia dello hiatus esofageo si deve usare, ogni qual volta possibile, la via toracica perche la percentuale di recivida (18,2%) e circa la meta di quella osservata usando la via addominale (33, 3%)

SUMÁRIO

Os casos operatorios do Los Angelis County Hospital são revistos por um periodo de seis e meio anos, terminando em 31 de Dezembro de 1949 Durante esse periodo o diagnostico de hernia diafragmatica foi confirmado em somente 185 pacientes, 10 dos quais tinham hernias traumaticas, 10—hernias congenitas e 165—hernias do hiato esofageano, 42 do ultimo grupo vindo a ser operados

A intervenção cirurgica resultou em cura em 30 9 por cento e em melhora em 11 9 por cento Houve uma não retificada mortalidade de 19 05 por cento e uma taxa de recurrencia de 23 8 por cento Si os 3 pacientes que morreram depois de resseção do esofago por estenose e ulcera do esofago forem omitidos, ha uma taxa de mortalidade de 11 9 por cento Quatorze e trinta por cento de pacientes não obtiveram melhora

Hemorragia foi observavel, seja macroscopicamente ou por meio de exames quimicos, em 52.4 por cento de pacientes. Trata-se de uma doença da idade avançada, pois 49.9 por cento de pacientes tinham entre 50 e 70 anos de idade. A cento tinham mais de 50 e 64.2 por cento tinha mentre 50 e 70 anos de idade. A hernia concentrica do hiato esofagiano é ó tipo mais frequente (78.6 por cento); o tipo de esofago curto (seja congenito ou adquirido) foi o segundo em frequencia (19.05 por cento) e o tipo paraesofageano foi o menos frequente (2.4 por cento). Neste estudo uma tentativa foi feita para ver si havia uma correlação entre a presença de hemorragia e o tipo de corpo formado, o tipo de hernia do hiato, o tipo de dôr e os metodos de alivio para a dôr. Nenhuma correlação foi encontrada.

CONCLUSÒES

1. Recurrencias podem ser reduzidas (a) pela imbricação dos bórdos conforme a ilustração de "Harrington" mas empregada somente em 1 dos casos recurrentes; (b) pela desnudação do fundo do estomago e do diafragma adjacente e sutúra dessas superficies vivas conjunctamente, auxiliando-se com isso a formação de aderencias entre essas estrutúras, e (c) pelo uso de suturas absorviveis acolchoadas para reconstituição do diafragma.

2. A ressecção do esofago por estenóse registrou uma mortalidade de 75 por cento nos 4 casos em que foi usada. Esta po'de ser considreavelmente reduzida pela substituição de alguns tipos de cardioplastia similares aos comumente usados na pilóroplastia de Finney.

3. A herniotomia transtoracica semelhante a usada por Cohn e Heaton[7] deve ser mais extensamente praticada, particularmente em casos de esofago curto congenito ou em outros casos em que é encontrada dificuldade para trazer o estomago para dentro do abdomen.

4. A formação de teams operatórios é considerada acanselhavel porque oferece ao cirurgião suficiente experiencia e baixa a taxa de mortalidade. A maioria dos pacientes desta serie foi operada por diferentes cirurgiões, muitos dos quais haviam praticado antes apenas uma ou duas reconstruções de diafragma. Em alguns casos era a primeira reconstrução do operador.

5. A via toracica deve ser usada para reconstrução de hernia do hiato esofagiano quando possivel, pois a taxa de recurrencia (18.2 por cento) é de cêrca da metade daquela que se observou quando a via abdominal foi usada (33.3 por cento).

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Evaluation of the Surgical Treatment of Congenital Pulmonary Stenosis*

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IT HAS been demonstrated that relief of cyanosis due to congenital pulmonary stenosis can be satisfactorily accomplished by various surgical procedures. Many patients have been operated on since Blalock and Taussig[1] reported their first successful operation about six years ago. During this time great progress has been made by cardiologists and roentgenologists in the accurate selection of patients suitable for operation. Surgeons have learned much about operative technic, and anesthesiologists have progressed in the skill of keeping hypoxic patients alive during a hazardous operation.

This paper is a discussion of clinical observations made during the past five years.

Anesthesia—To pour ether out of a can to anesthetize a child for a simple herniotomy is one thing; to anesthetize a deeply cyanotic child on the brink of death and to carry it successfully through a two-hour operation for congenital pulmonary stenosis is quite another. From our own observations and from the comments of many of our foreign visitors it is rapidly becoming recognized that expert induction of anesthesia by an adequately trained anesthesiologist is a *sine qua non* of the surgical treatment of congenital pulmonary stenosis. Emergencies often arise during operation which have to be met instantaneously and can be solved only by one who is thoroughly grounded in the basic physiologic principles of respiration and circulation. Nothing is so comforting to the surgeon when difficulties arise as to be able to stand by relaxed, in full confidence that the anesthesiologist is capable of solving his own problems intelligently and adequately.

Liberal preoperative doses of morphine balanced with atropine sulfate or scopolamine hydrobromide (usually the latter) are of value in quieting the child's fears, in promoting smooth induction of anesthesia, in reducing the amount of the anesthetic agent required in lowering the metabolism, and, in my opinion, in lessening cardiac arrhythmia. For example, a 4-year-old child is given $\frac{1}{8}$ to $\frac{1}{12}$ gr. of morphine and $\frac{1}{200}$ gr. of scopolamine or atropine. I have discontinued the use of preoperative barbiturates because of their tendency to depress the respiratory mechanism.

Multiple anesthetic agents confuse the anesthetist and make it difficult for him to evaluate the causes of difficulties. How can an anesthetist know what to do in an emergency when a patient is full of barbiturates, morphine and atropine, is receiving procaine in one vein and pentothal in another, is breathing oxygen, nitrous oxide and ether and gets a shot of curare? Dr. William O. McQuiston, our anesthesiologist, uses ether, cyclopropane and oxygen during induction of anesthesia and usually eliminates the ether after intubation has been accomplished. The fewer the anesthetic agents the less the confusion in balancing one drug against another.

Practically the only drug occasionally used during operation is atropine sulfate, given intravenously in doses of 1/1,000 gr. to a small child to quicken the heartbeat. Curare has been used rarely and only for patients who, because of severe hypoxia, make gasping attempts at respiration during the actual anastomosis. Time is important in performing the anas-

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tomis, and it can be done more rapidly and accurately if the chest is quiet. It has been said that "curare can make any anesthetic look good." Curare is still a poison.

A professor of physiology said during one of his lectures to us junior students on the subject of anesthesia: "Remember, when you anesthetize a dog you half kill it." A very sound remark. Every anesthetic agent is toxic. The less anesthetic given the better. Complete relaxation is unnecessary during cardiac operations. Severely cyanotic patients are carried under anesthesia so light that at any time during the operation the child will close its fingers when the palm is stimulated.

There has been considerable difference of opinion about the merits and dangers of completely controlled respiration. In approximately 500 operations for congenital heart disease we have always had controlled respirations and have seen absolutely no ill effects. If the anesthetist has once "spoiled" a surgeon by giving him an absolutely quiet operative field, he will demand it thereafter. Surgical technic can be infinitely better and far more rapid if the structures that are being sultured do not move with each inspiration. In my opinion oxygen want is less likely to occur during controlled than during spontaneous respirations.

Temperature Control During Operation.—Patients with pulmonary stenosis retain a certain level of cyanosis regardless of the amount of oxygen that is poured into their lungs, for the simple reason that the blood flow is insufficient to pick up the necessary oxygen. Unfortunately, to date there is no way to supplement the intake of oxygen for long or even short periods. However, by cooling the patient one lowers the metabolic rate and decreases the consumption of oxygen. It appears from repeated observations that cyanotic patients tend to show a greater rise in temperature during operation than do normally oxygenated patients. It is not uncommon during the period of induction of anesthesia and insertion of polyethylene tubing in the saphenous vein to have the temperature rise to 101 or 102 F. Of course, when this happens the patient is consuming oxygen more rapidly than do patients whose temperature is normal or below. It is well known that with each degree of elevation in temperature (Fahrenheit) oxygen consumption is increased about 7 per cent.

Approximately three years ago, confronted with an extremely cyanotic 4-month-old child in desperate condition, we decided to cool this child vigorously during the operation to test the idea of reducing its oxygen needs. No one on the staff believed that this child had a chance of surviving the operation. The child was surrounded with ice packs and the temperature reduced to 93 F. To our surprise and gratification, the child went through the operation without much trouble and made an uneventful postoperative recovery. So impressed were we with this good fortune that cooling during operation promptly became routine. Bigler and McQuiston[2] have given a preliminary report on our early cases. We now routinely use their continuous temperature recording device with the thermocouple in the rectum. A rubber mattress (actually a large water bottle) with an inflow and an outflow valve is placed on the operating table beneath the child. This mattress is covered with a double layer of sheeting. As soon as the patient is asleep, cold water is run into the mattress. If the child is very cyanotic, ice water is used. The moderately cyanotic child is kept at normal or nearly normal temperature throughout the operation. The dangerously cyanotic child is promptly cooled to 94 to 96 F. Immediately after anesthesia has been accomplished it is important to watch the downward curve of the temperature and discontinue the flow of ice water when the temperature is approximately 1 degree F. above the level desired. As soon as the anastomosis is completed, warm water is run through the mattress if the temperature has been brought down well below normal.

We have practically eliminated death from anoxia on the operating table since we instituted this cooling system. In fact, we are so firmly convinced that the temperatures of all patients should be kept near normal during any operation that the water mattress and the temperature recording device are used routinely for all operations except brief procedures.

May I suggest an experiment? Put a thermometer on the operating table some day between a couple of sandbags, cover with routine operating linens and turn on all the operating room lights. The mercury will soon go up to 105 F.—an uncomfortable atmosphere awake or asleep. Why subject the nonprotesting anesthetized patient to such a temperature?

Although the idea of cooling patients during operation is not new, it still is contrary to old traditions that demand a hot operating room so that the patient will not have pneumonia. In hot countries where air-conditioned operating rooms are not available it seems to me that routine cooling is essential. Incidentally, there have been no postoperative complications traceable to either minimal or vigorous cooling during operation in more than 300 surgical interventions for congenital heart disease.

Cardiac Arrest.—Cardiac arrest has been much discussed during recent years. The term is tossed about loosely; at times, perhaps, it is used as a graceful excuse for an unexplained death. Cardiac arrest during operation should be defined as sudden cessation of cardiac activity due to no demonstrable cause. Patients who have an inadequate exchange of gases during anesthesia, who aspirate blood, fluid secretions or vomitus during operation, or who receive lethal doses of anesthetic agents die not of cardiac arrest but of suffocation and poisoning.

Persons with normal hearts and good general health do not die suddenly of cardiac arrest. Why should they die in this way under anesthesia so long as less than a minimal lethal dose of the anesthetic agent is being given? If the average patient who is cyanotic with congenital pulmonary stenosis has normal heart action from day to day, why should he not continue to have normal heart action during an operation so long as he has adequate exchange of gases and is not being poisoned by too much of too many anesthetic agents? To be sure, operations on the heart itself may cause arrhythmia and cardiac arrest, but in such instances there is a definite reason for their occurrence.

Sloan[3] has demonstrated in experimental studies on dogs the importance of inadequate oxygenation as a cause of cardiac arrest. We at the Children's Memorial Hospital firmly believe that the causes of cardiac arrest are, first and foremost, inadequate oxygenation, second, too much anesthesia, and third, a combination of the two. The anesthetized patient requires as much oxygen as the wide-awake resting person. The anesthetized patient, however, is often so deeply asleep that he cannot make known his crying need for oxygen, and as he goes into cardiac arrest.

I hesitate to write the following sentence and hope that it will not be regretted. In well over 600 operations for congenital heart disease and pulmonary pathologic conditions in children below 16 years of age we have had but 1 questionable case of cardiac arrest. The patient was a 2-year-old child undergoing a transventricular operation for pulmonary stenosis with intact interventricular septum. Why this good fortune? I do not know—certainly not because our surgical technic is different from that used elsewhere. I believe credit is to be given to the department of anesthesia, whose constant watchwords are "oxygen and more oxygen" and "light anesthesia." In surgical treatment of pulmonary stenosis we have had deaths on the operating table and shortly after the operation was completed. They were due to recognized but uncontrollable hypoxia. The hearts stopped beating, but the patients did not die of cardiac arrest.

Operative Procedures.—For the surgical relief of congenital pulmonary stenosis Blalock and Taussig initiated the sacrifice of a systemic vessel and the transplantation of its proximal end to a pulmonary artery. Potts, Smith and Gibson[4] have developed anastomosis of the aorta to a pulmonary artery; Brock[5] has advised removing the infundibular obstruction inside the right ventricle. Each operation has some merits. The subclavian artery may be sacrificed without danger, and its proximal end may be used to shunt blood to the lungs. Use of the carotid or the innominate artery is rarely, if ever, justifiable because of the real danger of hemiplegia. Aortic-pulmonary anastomosis may be used, especially if the patient is an infant, because the subclavian artery at that age is too small to anastomose successfully and is apt to become thrombosed after the operation. There may be some advantage in aortic-pulmonary anastomisis in that the size of the opening is easily controllable. The Brock procedure of removing the infundibular stenosis with a rongeur forceps introduced through the wall of the right ventricle has not been generally accepted by surgeons in the United States. If it were possible preoperatively to determine the exact extent of the infundibular stenosis and the degree of aortic overriding, selected patients might be treated by this method. So long as intracardiac surgery is blind as it is today, it is not an attractive idea to enter the heart surgically and nip out bits of tissue.

A detailed pathologic study of 24 cases of the tetralogy of Fallot is now in progress. A preliminary review of these cases shows that 7 of the patients had infundibular stenosis limited to the region just proximal to the origin of the pulmonary artery. These 7 patients might have been treated by simply thrusting a valvulotome through the constricted area. It would have been very difficult in the other 17 patients to cut out accurately the offending constriction.

Brock[6] and Sellors[7] have introduced an important and extremely satisfactory method of dealing with pulmonary stenosis with intact interventricular septum (so-called "isolated" or "pure" pulmonary stenosis). In this condition the consequential pathologic change is limited to the pulmonary valve. Incision and dilatation of this obstruction by a valvulotome introduced transventricularly yields spectacular results. Recently Potts and Riker[8] described an expanding valvulotome and dilator which are satisfactory for this procedure and minimize the loss of blood.

Our choice of surgical procedure (subject to change without notice) for patients with congenital pulmonary stenosis is as follows: If the patient has the typical tetralogy of Fallot with the aorta descending on the left, the chest is entered through the left fourth interspace and an aortic-pulmonary anastomosis is done; if the arch descends on the right, the chest is likewise entered through the left fourth interspace and a subclavian-pulmonary anastomosis is done. Only when the patient is an infant below approximately 1 year of age, who has a right-sided aortic arch and who cannot live without surgical relief do we do an aortic-pulmonary anastomosis on the right side. With patients who have "isolated" pulmonary stenosis a left submammary approach is made, and the stenotic valve is incised with an expanding valvulotome and enlarged with a dilator introduced through the wall of the right ventricle. Occasionally, though the tetralogy of Fallot has been diagnosed preoperatively, isolated pulmonary stenosis may be observed at operation. In 2 such instances the stenotic pulmonary valve was incised satisfactorily by introducing the valvulotome proximally through the pulmonary artery. When the opposite preoperative error was made and discovered at operation, the chest wall incision was extended laterally and either an aortic-pulmonary or a subclavian-pulmonary anastomosis satisfactorily accomplished.

Mortality.—Any discussion of mortality is apt to be clouded by various methods of grouping and selecting cases. We have divided the patients operated on for the tetralogy of Fallot into two groups: those below 3 years of age, a total of 110, with 25 deaths, or a mortality rate of 23 per cent; and those from 3 to 16 years of age, a total of 160, with 4 deaths or a mortality of 2.5 per cent.

Those patients in whose cases, for one reason or another, a shunt operation was impossible withstood the operation poorly —11 of 24 exploratory operations terminated fatally, a mortality rate of 45 per cent. One death has occurred among 15 patients who have undergone valvulotomy for isolated pulmonary stenosis (see table).

Operative Mortality Rate

Ages of Patients on Whom Anastomosis was Performed	Number	Deaths	Mortality %
11 days to 3 yrs.	110	25	23
3 to 16 yrs.	160	4	2.5
Total	270	29	10.7
Valvulotomy for pure pulmonary stenosis	15	1	6.6
Exploratory procedures	24	11	45
Grand total	309	41	13.2

It is at once apparent that the mortality rate is high during the first two years of life. *If the child can live to its third year the chances of its surviving operation are about 97 per cent.*

In the choice of a surgical procedure the operative mortality must be taken into consideration. It is by no means claimed that a shunt operation is the procedure of choice. As a matter of fact, the shunt operation is a makeshift procedure, which in time will probably be replaced by one that not only relieves the cyanosis but corrects the basic pathologic condition in the heart. Until such an operation is perfected we have no choice but to use the operations that relieve symptoms satisfactorily and allow a high percentage of children to walk out through the front door of the hospital.

Results and Prognosis.—Results of the shunt operations for congenital pulmonary stenosis are subject to all manner of interpretation. The cyanotic, helpless child who can run and play after the operation represents to his parents a marvelous result. To the critical physician the result is merely "satisfactory," because he realizes that the heart is being put under an added constant strain. However, it is now five years since the first aortic-pulmonary anastomosis was performed, and the patient, a child 21 months old and completely helpless at the time, is now almost 7 years old, keeps up with the other children, goes to public school and prefers to walk rather than ride the mile up and back to school each day. Her heart became somewhat enlarged immediately after the operation but since then has maintained exactly the same cardiothoracic ratio. This is true of other children who have been carefully followed by Drs. Gibson and Leininger and myself[9] for three to four years after operation.

Speculations about life prognosis at present are futile. To anticipate a normal life span is ridiculous, but it is beginning to appear that these patients may marry, bear children, have fun and get into trouble like other people so long as they remember to protect their heart muscles as much as possible. I doubt that many will enjoy the pleasure of seeing their grandchildren.

SUMMARY

Congenital pulmonary stenosis and its surgical treatment are discussed, with emphasis on suitable anesthesia and control of temperature. Cardiac arrest is also dealt with.

The mortality rate of the condition is high in the first two years of life, but if a child lives into its third year the chance of survival after operation is 97 per cent. The prognosis as to the life span is indeterminable at present.

RÉSUMÉ

On discute de la sténose pulmonaire congénitale et de son traitement chirurgical. On appuie sur le genre d'anesthésie possible et du contrôle de la température. On discute aussi de l'arrêt cardiaque. Le taux de mortalité est élevé les 2 premières années de la vie; mais si l'enfant atteint 3 ans, ses chances de survie après l'opération sont de 97% Le prognostic de longévite estindéterminable mais sûrement pauvre

ZUSAMMENFASSUNG

Es liegt eine Besprechung der angeborenen Pulmonalstenose und ihrer chirurgischen Behandlung vor Auf angemessene Narkose und auf Fieberkontrolle wird besonderer Nachdruck gelegt, und auch auf die Frage des Herzstillstands wird eingegangen

Die Sterblichkeitsziffer bei dieser Erkrankung ist hoch, sofern es sich um Kinder in den ersten zwei Lebensjahren handelt Erreicht das Kind jedoch das dritte Lebensjahr, so steigt die Chance, die Operation zu ueberleben, auf 97% Die Prognose hinsichtlich der Lebenslaenge ist unbestimmbar, aber offensichtlich schlecht

Se discuten la estenosis pulmonar congenita y su tratamiento quirurgico, insistiendose sobre la anestesia conveniente y el control de temperatura Se insiste tambien sobre el paro cardiaco

El indice de mortalidad de este estado es alto en los primeros dos años de vida, pero si un niño llega a los tres la probabilidad de supervivencia postoperatoria es del 97% El pronostico sobre el periodo de vida no es determinable y es evidentemente escaso

SUMÁRIO

A estenose pulmonar congenita e seu tratamento cirurgico são discutidos, realçando-se a importancia da anestesia adequada e o controle da temperatura A parada do caração e tamben estudada

A taxa de mortalidade desta condição e alta nos primeiros 2 anos de vida mas se a criança atinge o terceiro ano a chance de sobrevida apos a operação e de 97 por cento A prognóse quanto ao prolongamento da vida é indeterminiavel mas obviamente obscura

RIASSUNTO

Discussione sulla stenosi polmonare congenita e sua cura, con particolare riguardo all'anestesia piu adatta e al controllo della temperatura Viene trattato anche l'arresto cardiaco

Quest'affezione presenta una elevata mortalita nei primi due anni di vita, ma se il bambino riesce a raggiungere il terzo anno le sue probabilita di sopravvivere all'intervento sono del 97%

La prognosi sulla durata della vita non puo essere stabilita con sicurezza, ma è, naturalmente, cattiva

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Suction Surgical Treatment of Cataract in Children

Visual Rehabilitation

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FOR many years, my associate sons and I had performed intracapsular operation for cataract, particularly the Barraquer technic, on adults with great satisfaction and the feeling that it produced nearly ideal end results. We were, however, much dissatisfied with the results obtained by recognized methods in the treatment of developmental, congenital, juvenile and traumatic cataracts, as well as those without a hard nucleus and not considered suitable for intracapsular extraction. We felt that the classic needling operation, which left all or part of the cataract in the eye with the hope that it would be absorbed, was decidedly incomplete.

The method employed by surgeons for juvenile or soft cataract has, for centuries, continued to be the "needling" operation. In spite of its inadequacy it is still employed by many ocular surgeons. I sent a questionnaire to a large list of eye surgeons asking their opinion of the permanent good results, and nearly a hundred replied. A composite reply could be as follows: "I know of no authentic statistics, but probably not more than 50 per cent get a good permanent result from needlings."

Every experienced ophthalmologist encounters a large number of cases of cataract in which a needling has been performed in childhood, and in which the lens debris and capsule later adhered to the iris, became sclerotic, and obstructed vision. Later in life the patients have little or no useful vision, and some may still have a partially absorbed cataract interfering with clearness of the media and useful vision. In a number of such patients, glaucoma or other pathologic conditions may develop, owing to the synechia or exudate blocking filtration. Some who first obtained fairly good vision later lose it because of this exudate blocking filtration.

Such patients have been denied retinal fixation and education in youth, and many have nystagmus as a result. The end results have, therefore, been unfavorable in about 50 per cent, and when a surgeon advises a needling his patient should be informed of these factors.

One of the best authors, Fuchs[1] (cited by Duane) has stated: "After the operation for discission of the lens capsule, the aqueous enters the lens through the wound in the capsule and the lens swells up and is gradually absorbed in the manner described at length under the healing of traumatic cataract. In fact, discission is nothing but an imitation of the kind of injury of the capsule that accident so frequently produces."

"Discission is adapted for all soft cataracts, i.e., for those which are capable of complete resorption because they have as yet no hard nucleus. This is the case in children and in adolescents. Discission may also be made in those cataracts that still contain transparent portions of the lens substance, since these become opaque under the influence of the aqueous. The form of cataract most frequently requiring this treatment is perinuclear cataract. Lastly, discission may also be employed for removing perfectly

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From the Eye Department, Deaconess Hospital, Marshalltown.

Read at a meeting of the Eye Section of the International College of Surgeons, Buenos Aires, Argentina, August, 1950.
Submitted for publication Aug. 22, 1951.

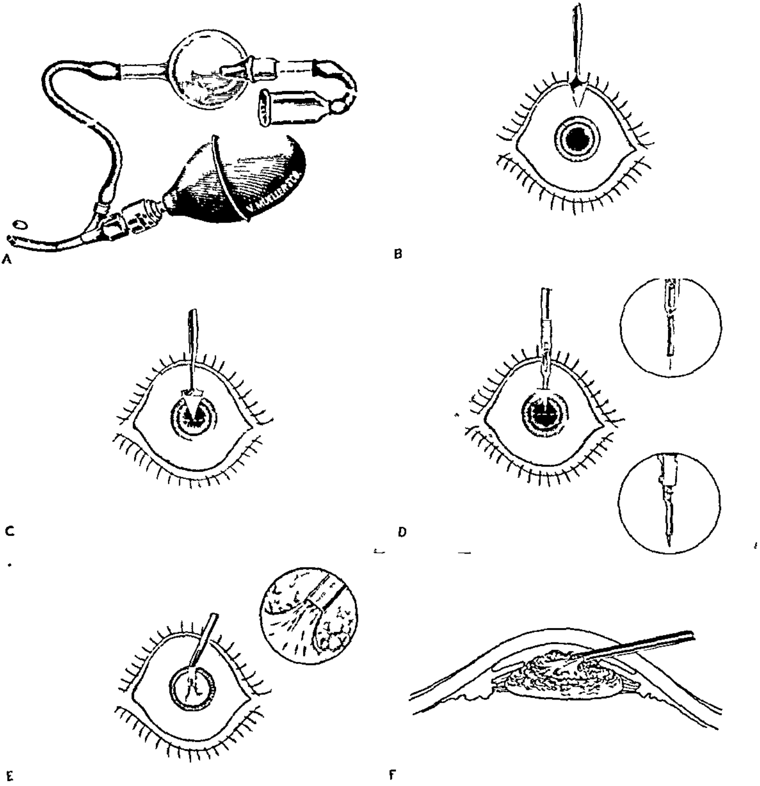

Fig 1 —*A*, Wolfe double barrel cataract suction instrument This is available with openings of two different sizes, 2 and 3 mm respectively After discission of anterior capsule, fluid injected through smaller needle enables soft lens to be sucked out through larger barrel *B*, keratome picks up conjunctiva as point carries it down to limbus *C*, incision at limbus into anterior capsule Point pierces lens capsule and is turned for further rupture of capsule and lens Sheath-covered needle is used if lens is not sufficiently broken *D*, sheathed knife needle point covered to protect iris while keratome incision is inserted After it enters anterior chamber, assistant pulls back sheath and needle is used to incise anterior capsule in same manner as regular needle knife *E*, cannula enters anterior chamber to center Suction begun; lens seen in process of evacuation Fluid injected to maintain normal depth of anterior chamber and keep lens debris in solution *F*, schematic drawing to show position of suction cannula in anterior chamber and opaque lens material surrounding cannula tip before suction is started.

transparent lenses when it is a question of doing away with a high degree of myopia by operation."

". . . In cases cited, discission may be the only operation done; i.e., after doing it we simply wait for a gradual resorption of the lens to take place. This usually requires some months and a repetition of the discission is often necessary."

These excerpts from Duane's classic textbook on ophthalmology offer a fair estimate of the surgical procedure generally used for children and young adults with cataract; in fact, for years it has been the universal method of dealing with all types of soft cataract. We contend that needling alone is an incomplete surgical procedure. With the method presently to be described, needling is rendered obsolete. Our contention is based on about 350 cases with only 4 wholly unfavorable surgical results. In these 2 cases the result could be attributed to faulty technic.

Our procedure is fully applicable in all types of cases mentioned by Duane; hereditary and congenital cataract, the so-called juvenile type, the traumatic type, and the perinuclear (zonular) or lamellar type. It is also efficient for the removal of selected types of lenses associated with high myopia. It is applicable to the toxic types, such as those caused by dinitrophenol, in which lens degeneration and softening has taken place. In 1 patient with toxic cataract, aged 55, the lens was sufficiently soft to be extracted by the one-step procedure herein described. It is, therefore, obvious that the new technic has a wide field of application.

I shall not discuss the causes or the diagnosis of the many types of cataract. I merely state that if the ordinary meth-

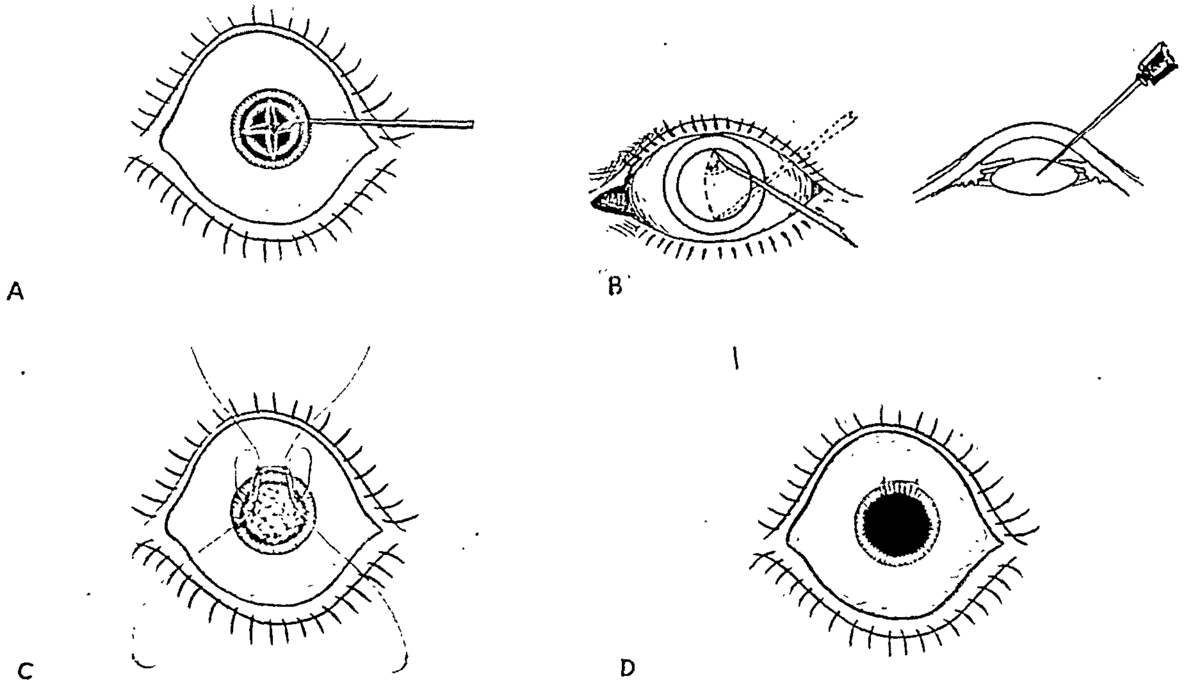

Fig. 2.—*A*, discission of capsule and lens performed with curved needle. Same as classic needling technics. Instead of stopping here and waiting for natural absorption of lens, we suck it out (Fig. 1, *E* and *F*). *B*, schematic drawing of our needle technic (classic). *C*, type of suturing. One or two are placed after keratome incision, looped and laid away to be tied after suction has emptied anterior chamber. *D*, sutures drawn and tied. Note clear round pupil immediately obtained, with no cataract remaining.

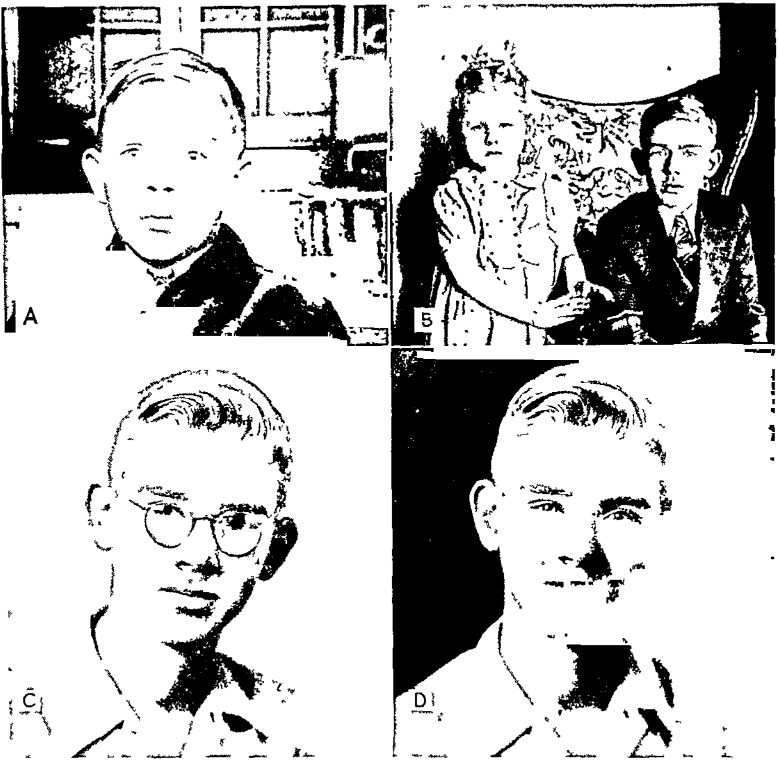

Fig 3 —*A*, L A , aged 6 Both eyes operated on with local anesthesia, with interval of two weeks between operations Photograph taken two weeks after second operation *B*, L. A one year later. *C*, L A aged 18, wearing regular cataract glasses 20/15 vision Graduating from high school as honor student *D*, L A wearing contact lenses Participated in all sports; operated school's motion picture apparatus Perfect rehabilitation

ods of examination, and particularly the slit lamp, demonstrate that the lens is soft or semisoft, the method is applicable. Occasionally my associates and I have found opaque lenses which, to all purposes and to every known means of examination, appeared soft yet had a firm or solid nucleus. This situation has been encountered even in a very young child. In such instances the keratome opening described must be slightly enlarged and linear or forceps extraction combined with our technic. This, however, has not occurred in more than 3 or 4 of the entire number of operative cases and need not deter any surgeon from proceeding with the tech-

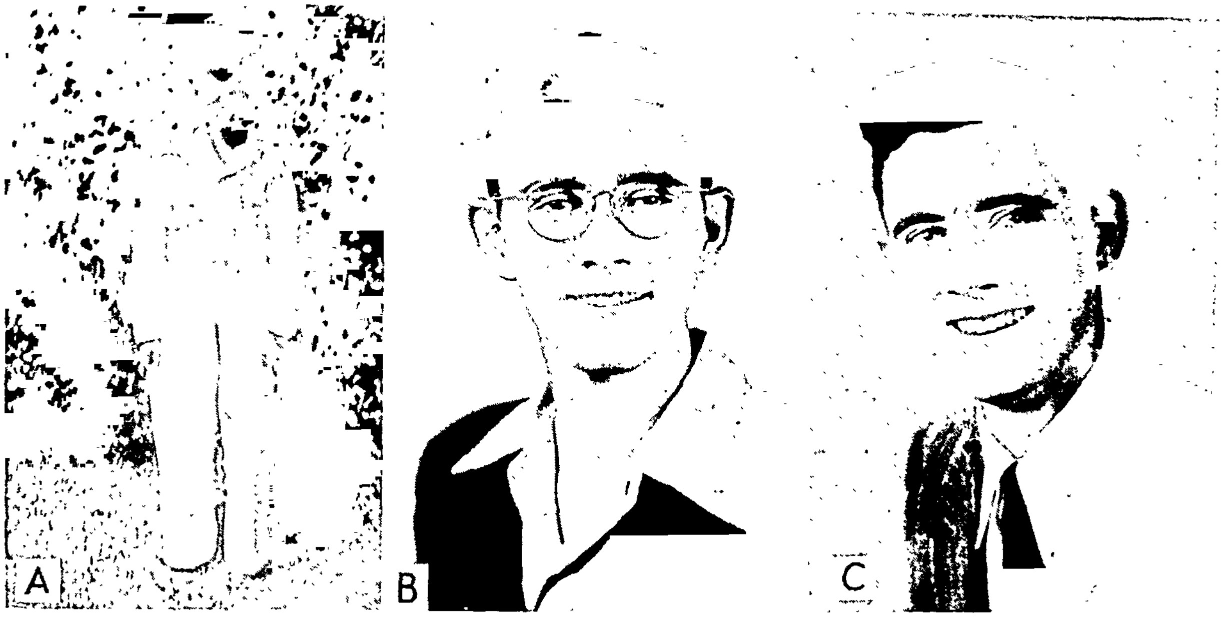

Fig. 4.—*A*, G. N., aged 9. Parathyroid cataract. Suction operation on both eyes. *B*, G. N. nine years later, with regular cataract glasses giving normal vision. Complete rehabilitation. *C*, G. N. wearing contact lenses. 20/15 vision. College student participating in all activities.

nic when he is not certain whether there is a solid or a semisolid nucleus.

Teale[2] demonstrated that aspiration was effective with many types of soft cataract, and our own[3] modification of his instrument, as well as one described by F. W. Dean,[4] was employed by us for some time until the new double-barreled instrument was perfected. The new one combines all the advantages of the other suction plus lavage, or hydraulic washing. Other advantages will be pointed out later. The instrument (Fig. 1*A*) is very simple. It consists first of a double-barreled cannula, one barrel being the size of an ordinary hypodermic needle and the other about four or six times larger. It is made in two sizes. The cannulas are combined in one shank, the larger one leading back to a rubber tube and a mouth suction tip. Interposed between is a glass trap. Attached to the small-caliber needle is a small (½ ounce) soft rubber bulb containing the irrigating fluid. For babies or young children in whom the lens is definitely soft, the technic is as follows: With the patient under general anesthesia, a keratome incision is made about 2 mm. back of the limbus on the temporal side, preferably at 180 degrees or slightly below. The conjunctiva is carried up on the end of the keratome. (Fig. 1*B*). (Recently we have been doing more corneal incisions with one or two corneal sutures previously placed.) The keratome incision is carried into the well dilated pupil, where the keratome tip incises the capsule and penetrates the lens (Fig. 1*C*). The tip is moved back and forth, and if a narrow keratome is used a good discission can be performed. Occasionally a needle that has a scabbard or sheath to protect it (Fig. 1*D*) when it is passing over the iris is used for further breaking of the lens. The double-barrelled cannula is then inserted through the keratome incision into the anterior chamber, care being taken to keep away from the posterior

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Fig. 5 (*opposite*).—*A*, three 6-month-old babies totally blind. Operation sucessfully employed. (Eighteen children under the age of 12 months have been operated on to prevent amblyopia.) *B*, 5 children with congenital cataract after surgical treatment. *C*, 4 children and 2 young adults successfully treated by operation.

A
B
C

Fig. 6.—A, R. O., baby aged 5 months, totally blind (congenital cataract). Complete annular synechia. Iridectomy and suction operation at age of 7 months. *B*, same child shown with sister ten months later. Good vision. *C*, 2 babies aged 6 months and a 3-year-old boy after operation for cataract. Normal vision obtained.

surface of the cornea. Suction is then instituted and as much of the lens substance as possible evacuated. Then, by gradual and gentle action, a continuous injection of warm saline fluid combined with suction action is maintained, the objective being to keep the anterior chamber well filled with fluid while the suction is in progress. This not only protects the cornea and prevents it from collapsing but enables maximum suction to be attained. There is a certain amount of hydraulic action or lavage. Particles of lens can be demonstrated by means of the fluorescent action of the Hildreth lamp. These are seen in rotary circulation in the anterior chamber and on their way to being drawn up into the suction cannula (Fig. 1, *E* and *F*).

After the anterior chamber is emptied of lens substance, the pupil is free and appears black. The Hildreth lamp is again used to show whether all or most of the lens and capsule has been extracted. Also, with the aid of the ophthalmoscope, it is determined whether or not the posterior capsule is opaque. The majority of hereditary and congenital cataracts being perinuclear, the posterior capsule is usually not involved, and surgical treatment of the posterior capsule is not necessary. In a certain percentage of cases it may later become opaque and require discission.

If, however, the posterior capsule is opaque, a discission can be performed at the time. There is no advantage whatever in waiting.

After we are quite certain that sufficient lens has been extracted, the cannula is withdrawn and at the same time the iris is smoothed out with the instrument. Occasionally it is incarcerated and has to be reposited with a spatula. The scleral and conjunctival stitches that were placed before the lens was aspirated are tied and an air bubble is injected.

It is of some advantage to have the keratome incision begin in the conjunctiva, as it nestles around the suction tip and provides more efficient suction than when the incision is in the cornea. However, if the pupil does not dilate, a keratome incision is made in the cornea with previously looped sutures and an iridectomy is performed. Should a solid nucleus be encountered at this time, as has been observed in a few instances, even in young children, the conjunctiva is elevated and the Wescott scissor used to enlarge the corneal incision, the solid portion of the lens being removed by forceps or spatula. If the posterior capsule is not opaque when examined by the Hildreth lamp and the ophthalmoscope, it is left intact. In

Fig. 7 (*opposite*).—*A*, 4-year-old girl with mother and aunt. Congenital cataract; photograph taken after operation. Normal vision obtained. *B*, B. F., baby aged 6 months. Totally blind from congenital cataract (total synechiae). Shown ten days after operation, wearing glasses. *C*, same child aged 4. Good vision obtained.

A
B
C

about 25 per cent of the cases it may later be necessary to perform a discission, which is a very simple procedure.

In the majority of cases, particularly those in which the patients are older children, a discission of the lens is performed several days in advance of the extraction (Fig. 2, *A* and *B*). This is the classic discission which allows the aqueous to infiltrate and soften the lens for several days. It is carefully watched under the slit lamp, and the tension is noted once or twice a day. If considerable pain or discomfort occurs, the suction procedure is immediately performed, as high tension frequently occurs from the rapid swelling of the lens substance, exactly as in any traumatic cataract. The instrument's value in accidental cases of traumatic cataract and ruptured lenses is easily demonstrated. The Hildreth lamp is very helpful in demonstrating the consistency and softening of the lens, especially when used in conjunction with the slit lamp. For toxic cataracts like the frequently encountered dinitrophenol type the new suction technic is ideal, even in adults. In all of our 21 cases of cataract due to dinitrophenol, the lenses were comparatively easy to soften and aspirate, even in patients 55 years of age. After the preliminary discission and an observation period of a few days, there was no elevation of tension. The postoperative reaction is very slight, and it is not necessary to bandage the eyes for more than a day or two.

Figure 2*C* demonstrates sutures placed before the suction evacuates the lens. The sutures are drawn tight to prevent prolapse of the iris, demonstrating a clear black pupil (Fig. 2*D*). Useful vision is obtained within a few days, as compared to the many months' delay often encountered when discission alone is performed. Retinal educational measures can be instituted early. These offer many distinct advantages that might well be elaborated upon.

This technic is especially desirable for children and young persons who require surgical treatment for cataract and are apprehensive about the cosmetic result. Contact lenses are a boon to these aphakic patients. These will take care of the aphakic correction, obviating the use of

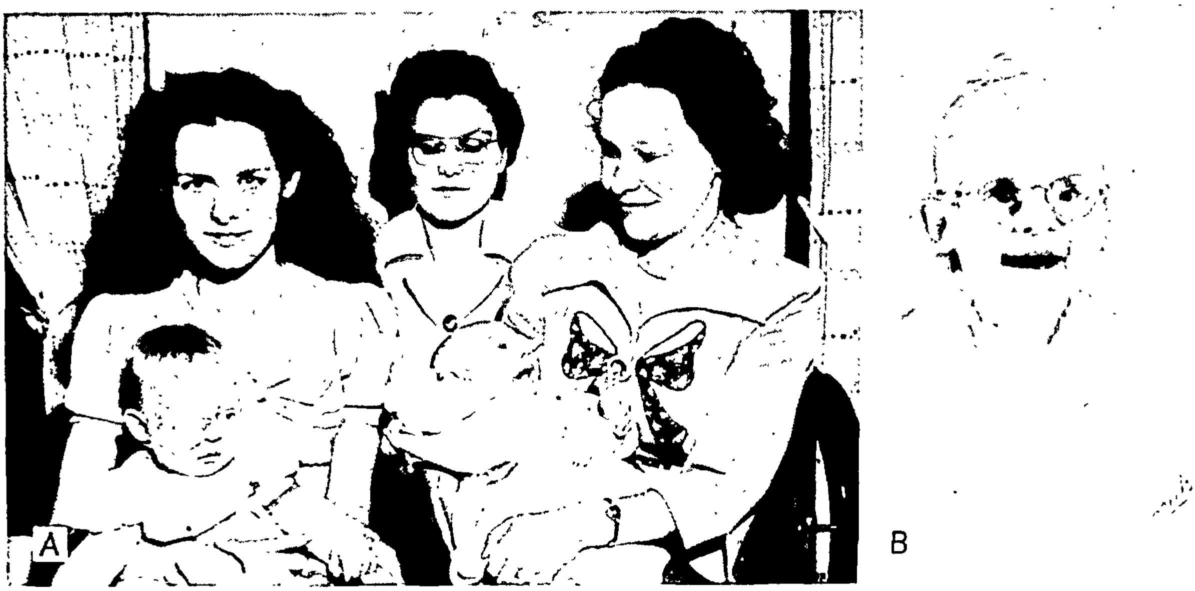

Fig. 8.—*A*, 2 babies successfully operated on, shown with mothers and nurse. Right, 10 months old; left, 11 months old. Baby on left (from Florida) totally blind, with cataract and microphthalmos. Mother had same condition in left eye. *B*, same Florida baby two years later after successful operation for cataract. Good vision in right eye. No function obtained in left because of retinal coloboma. Parents report child now does anything other children do, rides tricycle, etc.

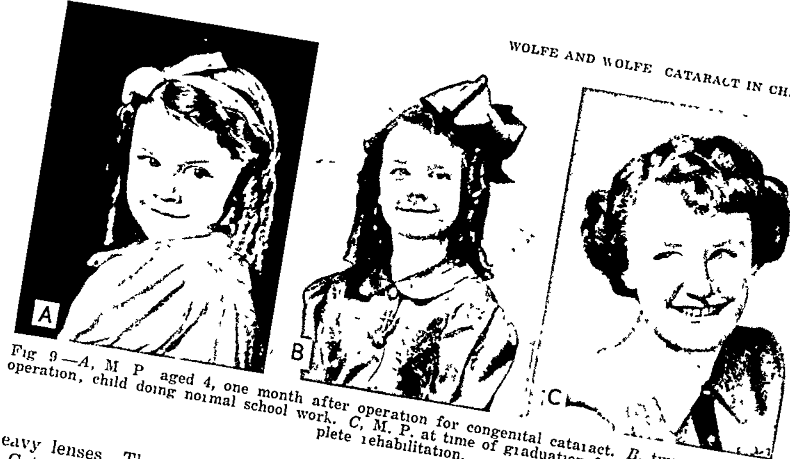

Fig 9—*A*, M P aged 4, one month after operation for congenital cataract. *B*, two years after operation, child doing normal school work. *C*, M. P. at time of graduation from high school. Complete rehabilitation.

heavy lenses. The advantage is obvious

Cataracts removed by this new suction method cause the minimum amount of trauma The resulting corneal scar is so small that it can scarcely be discerned. There is no disfigurement or elevation at the margin of the cornea. Consequently, a contact lens can be easily molded or fitted by any of the current methods. The technic also enables the contact lens to maintain better apposition to the cornea. All in all, it is the most desirable procedure for the removal of cataracts in those patients who subsequently prefer to wear contact lenses If the after-treatment is carried out thoroughly and consistently, and the pupil is kept thoroughly dilated, a round pupil will be obtained in practically every case. This is important, not only from the cosmetic view but for restoring the aphakic eye after a cataract operation as nearly as possible to the ideal —i.e., making a minor operation of what would otherwise be a major one.

After children have been operated on, it is necessary to educate the retina. At first some children have no sense of orientation or direction and no fixation, but with exercise they are soon restored to normal retinal function. We believe our cases prove that when the lens is completely removed, as it is with this technique, attention, perception, fixation, projection and fusion can be established early. Thus, patients presenting such defects as nystagmus will seldom be encountered after operation, unless these conditions were already present. They frequently follow the old type of needling operation. Of course, if there is a pathologic retina our ideal may not be obtained, but with the media cleared the retina can be stimulated. Our experience thus far warrants submitting the conclusion that if the media is entirely cleared, corrective glasses immediately fitted and retinal education immediately carried out, the eye is earlier restored to as nearly normal condition as is humanly possible. The retina can be educated in its normal way as soon as the refraction is performed. This is of great importance as the patients, especially children, are incapacitated for a very short time.

Twelve years ago, L.A., a 6-year-old boy with congenital cataracts in both eyes, was successfully operated on with local anesthesia. He was badly handicapped in school, and it was thought that he might have to attend a school for visually re-

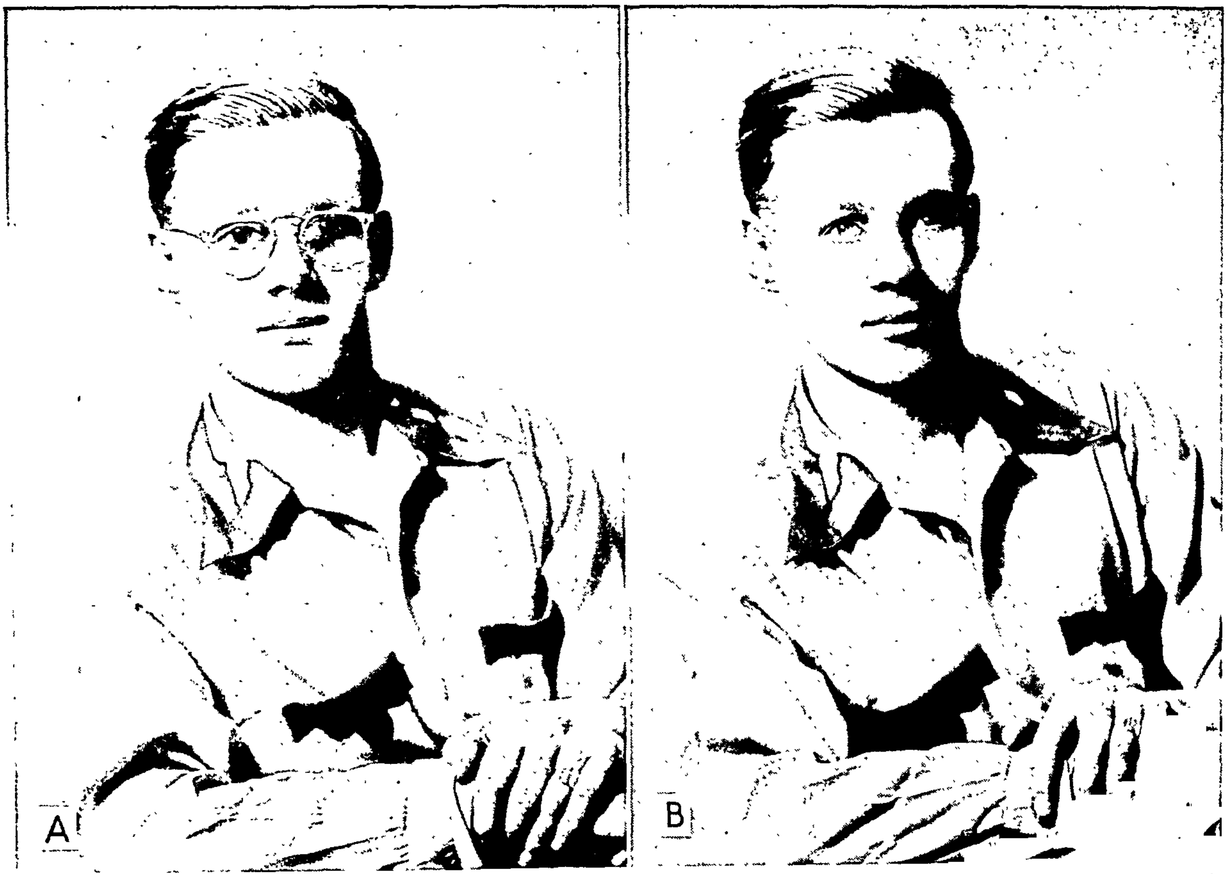

Fig. 10.—*A*, R. S., totally blind, aged 16. Newsboy from Chicago. Complicated congenital cataract. Left eye enucleated for tubercular iritis from thoracic involvement. Photograph taken two years after operation. Right cataract correction gave 20/100 vision. Patient wears prosthesis on left. *B*, R. S. with right contact lens, which he wears all day. 20/30 vision; holds down regular job.

tarded children or for the blind. However, after the suction surgical treatment, he attended regular school and was restored fully to a normal childhood. At present he is wearing contact lenses. He is an honor student, participates in all sports, and is not handicapped in any way. This boy was an unusually well-mannered child, and well trained by a sensible mother to meet the problems of life. (Two brothers have since been operated on). When the problem of surgical intervention came up he inadvertently overheard us making arrangements for ether and asked how grown people had the work done. He was told that they had the eye frozen. He said, "Well, I don't like ether, having had a tonsil operation, and would like to have it done like grown people do." By our exercising considerable suggestion, this child cooperated perfectly while the entire surgical procedure was performed on both eyes with local anesthesia. He said he felt no pain whatever. Figure 3, a series of four pictures, illustrates this case.

The case is mentioned not only to demonstrate the rapid restoration of vision but to prove that the suction extraction is a minor procedure compared with a regular cataract extraction, which this child would undoubtedly have had to endure in later life. It shows why we can say to any parent who has a child with congenital cataract, or any other type of soft cataract, that there is a tremendous advantage in not waiting to have the operation performed. This method is ideal while the lens is still soft and a minor operation can be performed rather than the major one which would certainly be necessary later

Our aspiration surgical technic was employed for another patient, a 9-year-old boy, blind from congenital cataract, with parathyroid deficiency Surgical intervention and the administration of parathyroid extract made a decided change in the child's appearance and mental faculties It was a most striking demonstration (Fig 4)

Figures 5 to 10 inclusive, with their legends, demonstrate further results with this method of treatment

The instrument recommended is also useful for aspiration of the lens substance after trauma or for pus At the same time aspiration is done, medicaments can be injected It would seem to have considerable potential value in certain cases for direct instillation of medicaments into the anterior chamber

CONCLUSIONS

A double barreled irrigating suction cannula method is presented for quick and easy removal of certain traumatic lenses and the lenses associated with high myopia and soft cataract It makes a more complete surgical procedure It creates very slight operative hyperemia or reaction, making possible refraction and the fitting of glasses in greatly reduced time The eye clears quickly, with little or no astigmatism Orthoptic and retinal training may be promptly instituted It makes the surgical treatment of all types of soft cataract a minor instead of a major procedure, with reduced hazards It is the safest of all operations for cataract Successful surgical results are estimated at 98 per cent as compared to 50 per cent for "needling"

Comments Appended One Year Later.—Eight cases presenting unusually difficult complications are briefly analyzed There were 3 cases of infection and plastic iritis, 1 patient recovered with a fair result, but in 2 the eyes were lost One of these was treated early and may have owed its result to faulty technic There were 3 cases in which the pupils were not kept dilated, in 2 of these reoperation was later performed with iridectomy, with fairly good results There were 2 patients with incarcerated iris due to trauma and a ruptured wound occurring after they left our care

Iridectomy is preferred in the more complicated cases, especially if normal pupillary action is not present In such cases the patients know beforehand that they are accepted for "salvage surgery" Three cases of possible retrolental membranes (the patients were premature children) in which the ultimate results are not yet known, but which demonstrate improved visual function, are not included

Because of possible iris incarceration, a corneal keratome incision is now favored, although the suction is not quite as efficient

After deduction of these 8 cases, the overall rate of successful results for the entire series is still 98 per cent

RÉSUMÉ

On fait la presentation d'une canule a deux canons irrigation succion pour exerese rapide et facile de cirstallin traumatise ou de cristallin associe avec grande myopie ou cataracte molle Cette canule fait l'operation chirurgicale complete Elle ne provoque que tres peu d'hyperhemie ou reaction operatoire et permet la refraction et l'adjustement des verres dans un temps tres reduit L'oeil s'eclaire rapidement, avec pau ou pas d'astigmatisme On peut entrainer rapidement la retine et l'orthoptique Le traitement chirurgical de tous les genres de cataractes molles devient une intervention mineure de majeure qu'elle etait et les risques sont diminues C'est l'operation la plus sure pour la cataracte Les succes se chiffrent a 98% comparativement a 50% avec l'aiguille

ZUSAMMENFASSUNG

Es wird eine Methode beschrieben, die es gestattet, mit Hilfe einer doppellaeufi-

gen Spuel-und Saugkanuele gewisse traumatisch erkrankte Linsen und Linsen in Faellen von hochgradiger Kurzsichtigkeit und mit weichem Katarakt schnell und leicht zu entfernen. Es handelt sich um ein vollstaendiges chirurgisches Verfahren, das nur eine geringe operative Hyperaemie oder Reaktion hervorruft und die Frist bis zur Refraktionsbestimmung und zum Anpassen von Glaesern erheblich verkuerzt. Das Auge klaert sich schnell auf und zeigt nur geringen wenn ueberhaupt einen Astigmatismus. Augenmuskel und Netzhautuebungen koennen sofort begonnen werden. Die Methode macht die chirurgische Behandlung aller Formen des weichen Katarakts zu einem kleineren chirurgischen Eingriff mit verringertem Risiko. Sie stellt die sicherste Form aller Kataraktoperationen dar. Erfolgreiche Resultate werden in schaetungsweise 98% der Faelle erzielt, zungsweise 98% der Faelle erzielt, methode.

RESUMEN

Se presenta un método consistente en una cánula con doble cañon de succión e irrigación, para la pronta y fácil remoción de ciertos cristalinos traumatizados y cristalinos asociados con gran miopía y catarata blanda. Constituye un procedimiento quirúrgico completo. Produce hiperemia o reacción operatoria muy ligera, haciendo posible la refracción y la adaptación de lentes en tiempo muy corto. Claridad ocular rápida con poco o ningún astigmatismo. Puede instituirse pronto el adiestramiento ortóptico y retineano. Constituye el tratamiento quirúrgico de todos los tipos de catarata blanda en vez de un procedimiento mayor, con riesgos reducidos. Es la más segura de todas las operaciones para catarata. Se estiman los resultados quirúrgicos como satisfactorios en el 98%, comparándolos con el 50% del "needling" (agujar).

RIASSUNTO

Viene presentato un metodo per l'asportazione rapida e facile di cristallini con lesioni traumatiche o associati a miopia grave e facomalacia, a mezzo di una cannula irrigatrice e aspiratrice a doppia via. Tale metodo, oltre a consentire una cura chirurgica completa, è assai poco traumatizzante, rende possibile la refrazione e l'adattamento agli occhiali in un tempo molto limitato, mentre gli occhi si rischiarano rapidamente senza o con scarso grado di astigmatismo. Inoltre si possono istituire rapidamente gli esercizi ortottici e retinici. Il metodo consente la cura chirurgica di ogni tipo di facomalacia con rischio assai ridotto ed è il più sicuro fra tutti gli interventi per cataratta. Si ritiene che si possano ottenere il 98% di successi, di fronte al 50% che si ottengono con i metodi di scissione con ago.

SUMÁRIO

E' apresentada uma canula de duplo cano para irrigação e sucção como metodo para rapida e facil remoção de certos cristalinos traumaticos e de cristalinos associados com alta miopia e cataráta móle. Isso compreende um processo cirurgico compléto. Com ele se cria léve hyperemia operatória ou reação tornando possivel a refração e o ajustamento de oculos em tempo enormemente reduzido. O olho limpa-se rapidamente, restando pouco ou nenhum astigmatismo. Treinamento ortóptico e retiniano pódem ser prontamente instituidos. Com isso se transfórma o tratamento cirurgico de todos os tipos de cataráta móle em uma pequena, em vez de grande operação, com reduzido risco. E' a mais segura de todas as operações para cataráta. Resultados cirurgicos favoraveis são estimados em 98 por cento, emquanto são de 50 por cento para os processos de sutura.

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Echoes of the Past

XIV THE PHYSICIAN PRESIDENT OF THE UNITED STATES

Many physicians played dignified and valuable roles in the establishment of colonial America Since the days of the Declaration of Independence the honor roll of American history has been embellished by the names of medical men who surrendered their wealth, their liberties and their very lives for their country. Few realize, however, that America has honored the medical profession by electing a man of medicine to the Presidency

William Henry Harrison, the ninth president of the United States (1773-1841), was born in Virginia He was the son of Benjamin Harrison, one of the signers of the Declaration of Independence In due time he was apprenticed to his family physician for medical training, according to the custom of the times. His apprenticeship completed, he began to practice the healing art, but, on the death of his father in 1792 he joined the army that Wayne was leading against the Indians of the Northwest He held the rank of ensign in this army His work was equally divided between medical care of the soldiers and an infantry line officer's duties.

Abandoning the army temporarily in 1798, he returned to medical practice. In 1811 war clouds gathered again Harrison became commander-in-chief of the American Army. Displaying great military ability, he defeated the Indians at the important battle of Tippecanoe His duties as commander-in-chief eradicated all interest in medicine, from which he was promptly divorced forever.

With the termination of the War of 1812 Harrison became interested in politics In 1824 he became a member of the United States Senate. Subsequently he went to Colombia as ambassador (1828) He was recalled in 1829 and passed several years in retirement as a clerk in a county court in Ohio

Since Harrison was an outstanding member of the Whig Party, the Whigs tried in vain to make him President in 1835 and succeeded in 1840 President William H. Harrison, physician, served in office for one month and died suddenly. He was succeeded by John Tyler.

Although his term in office was short, the American medical profession has the pleasure of knowing that one of its members received the highest honor in the nation's gift.

—Bernard J Ficarra, M D, F.I.C.S.

Treatment of the Postsurgical Menopause by Implantation of Estradiol Pellets

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ST. LOUIS

THE menopause syndrome is a symptom complex presenting many psychosomatic and endocrinologic components. It is not within the province of this paper to make an extensive review of the various factors that characterize the syndrome. Suffice it to say that the condition exists, is easily recognized, and when sufficiently disabling or annoying requires treatment.

Since a natural balance of function which exists among the glands of the endocrine system, there is, normally, a *slow* readjustment of these relations during the normal spontaneous menopause. With induction of an artificial menopause, either by surgical extirpation of the ovaries or by irradiation, there occurs a *sudden* change in the secretory function of the remaining endocrine glands. Drips[1] discussed this imbalance and commented that when the menopause is induced artificially the changes in activity of the other endocrine glands naturally are more abrupt than those accompanying spontaneous menopause. The symptoms are more likely to be severe at the onset of such an acute menopause, especially if the woman has had no ovarian dysfunction previously. The symptoms of the menopause syndrome are dependent not only on endocrine imbalance but on the psychosomatic reactions that result from glandular physiologic changes. It is very difficult, therefore, to predict in any one case just how much disturbance the patient will encounter.

McNair,[2] in discussing personality changes associated with surgical and radiation castration, cited McLaren[3] who observed that where hysterectomy was performed, with preservation of ovarian tissue, on women at an average age of 38, moderate to severe flushes developed in 1.5 per cent. Of patients undergoing hysterectomy with bilateral oophorectomy at an average age of 45, 47 per cent complained of the same symptoms. McNair also cited the work of Heller and his associates,[4] who noted an increase in the level of urinary gonadotropin after oophorectomy. Of such patients 58 per cent showed a depression of urinary gonadotropins to menopause levels within six days after the operation, 86 per cent within ten days and 100 per cent within one month. These surgeons also noted that the maximum degree of menopausal symptoms was reached in periods varying from twenty-seven to sixty-six days after the operation.

Of the two ovarian hormones, estrogen is generally considered the more vital in relation to the other endocrine glands[1] and to treatment. Objectively, deficiency of estrogen can be discerned in a more or less quantitative fashion. Shorr[5] stated that the vaginal smear provides an index of the adequacy of estrogenic treatment. The conversion of the atrophic vaginal smear to full cornification expresses total estrogenic effect. Bennett and TeLinde,[6] however, expressed the opinion that the vaginal smear is of no great clinical value as an indicator of the effectiveness of treatment. Perloff[7] stated that, although the vaginal smear may often be correlated with the symptomatic response to estrogen therapy, many exceptions exist and it appears to have little value for routine use. When one considers both the endocrinologic and the psychosomatic aspects of the menopause syndrome one is

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able to correlate such divergent opinions. It is not unusual to find a fully cornified smear associated with emotional or nervous symptoms of aggravated degree. Although it may not be an infallible guide, the general parallelism between changes in the vaginal smear and subjective improvement is often used as an additional indicator as to whether or not the patient is estrogen-deficient and as one of the criteria of the adequacy of estrogen therapy.

Therapy of the menopause is psychosomatic, sedative and endocrinologic.[5] Endocrinologically the menopause may be considered to represent a primary deficiency of ovarian follicular activity. The principle of estrogen replacement therapy in the management of the menopause syndrome is well established and sound.[6] The standard methods of drug administration, oral and injection, are not entirely satisfactory for all purposes. The frequency and the required regularity of treatment make it time-consuming and often lead to lapses in therapy. Subcutaneous implantation of specially prepared pellets of estradiol, the primary follicular hormone, seems to offer some advantages. Bishop,[9] in 1938, reported the implantation of estrone in a woman, with relief of menopausal symptoms. Deanesly and Parkes[10] reported the "effectiveness of crystalline gonadal hormones when administered by subcutaneous implantation of solid tablets of pure substance" to mice, rats, guinea pigs and rabbits. In subsequent observations they concluded that implantation of estradiol pellets resulted in a constant and prolonged absorption closely approximating natural secretion. Bennet, Biskind and Mark,[12] in 1938, treated menopausal patients with subcutaneous estrone pellets, noting subjective relief of symptoms within two weeks, which persisted for as long as fourteen and one-half weeks. Objectively, the urinary estrogen levels rose; the urinary gonadotropic hormone level was depressed, and prolonged stimulation of the vaginal mucosa occurred. MacBryde, Freedman, Loeffel and Allen[13] treated surgical castrates with diethylstilbesterol pellet implants. They reported complete estrogenation of vaginal smears in seven to ten days, with associated subjective improvement. Salmon, Walter and Geist[14] implanted crystals of estradiol benzoate, and 18 of 19 menopausal patients were relieved of hot flushes for three to five months. Okie[8] treated a series of patients with severe menopausal symptoms (the series included both natural and surgical menopauses) with implanted estradiol pellets. In all cases there was prompt relief of the menopausal symptoms, persisting for six to eleven months. Bennet and Te-Linde,[6] treating the menopause syndrome with estrogen implants, noted relief of symptoms for three to sixty-five weeks.

Occasionally the benefit derived from pellet therapy is less than expected and the duration of benefit is much too short. Such results may be due to a process of encapsulation and limited absorption. Greenblatt[15] expressed the opinion that implantation of estrogenic hormone pellets most nearly approaches the endogenous mechanism of hormone secretion.

Having become satisfied that implantation of estrogenic pellets is therapeutically practical and effective in the treatment of a menopausal syndrome, my interest was directed toward the control or elimination of these symptoms, which occur so frequently and so promptly after surgical extirpation of the ovaries. In October 1949, Perloff[4] commented that "the implantation of a pellet (estrogen) in the woman at the time of panhysterectomy may possibly prevent the abrupt onset of menopausal symptoms."

In March 1949 I implanted two 25 mg. pellets of estradiol U.S.P. subcutaneously during the closure of a complete hysterectomy with extirpation of both ovaries. Since that time the procedure has been followed in 37 cases. In this paper I shall summarize the results in 25 cases in which the patients have been under careful observation for periods varying from six months to two years.

There were 23 white and 2 Negro patients in the series. The age range was from 34 to 51, with an average of 43.5.

Indication for Operation.—The primary diagnoses in this series were myoma, inflammatory disease, descensus, adenomyosis, retrodisplacement of the uterus and ovarian cyst. In many of the patients more than one of these abnormalities was present, just as in many cases a multiplicity of symptoms created the indication for operation. Cardinal symptoms included menorrhagia, metrorrhagia, low abdominal pain, pelvic pressure, irregular menses, dysuria, increasing size of tumor, dysmenorrhea, backache and occupational disability due to one or more of these complaints. Seven of the 25 women complained of flushes, nervous tension or headache prior to operation—symptoms that might be construed as those of the menopause syndrome. None of these patients had ceased menstruating. Seven patients had undergone previous curettage.

Type of Operation.—Twenty-four complete abdominal hysterectomies, with removal of both tubes and ovaries, and 1 vaginal hysterectomy with removal of both tubes and ovaries comprise this series.

Operative Procedure.—During routine closure of the abdominal wound, after the fascia had been closed, a "pocket" was made in the subcutaneous fat by jabbing a hemostat at right angles to the incision about 5 cm. and spreading the points. (The tissue in this region is quite avascular, and troublesome bleeding does not occur.) Into this pocket were inserted two 25-mg. pellets of estradiol U.S.P.[*] In cases of vaginal hysterectomy the pellets were implanted laterally under the vaginal membrane. In 1 case three pellets (75 mg.) were implanted. An arbitrary dose of 50 mg. of estradiol was selected because pellets of such concentration had been used in therapy of the menopause. The pocket was closed with an interrupted suture, or with the fat-approximating suture if this was being employed. Closure was then completed in the routine fashion.

Observations.—No necrosis, extrusion, localized distress, discomfort or mass was noted. Aside from transient fullness of the breasts, there were no untoward side reactions. The most interesting observation associated with this study was the subjective progress of the patients. Occasionally, within the first week after operation, there were transient hot flushes. These abated and were usually completely absent by the time the patient left the hospital. There has been practically no need for sedation after their return home. During the months after operation the patients reported an excellent sense of well-being, much more satisfactory than is usually noted after this type of surgical therapy.

With few exceptions, there has been no need for supplemental hormone administration or sedation. Of the 25 patients treated by implantation, 1 noted troublesome flushes occurring within two months after operation but not requiring treatment until one year after operation. Another experienced the same symptom after eighteen months, requiring treatment. Two patients have complained of nervous tension and 1 of occipital headache. One patient noted occasional cold sweats about eighteen months after operation. Only the first of these patients has been uncomfortable enough to require persistent treatment.

As a control for this report another series of cases, in which the operation was performed but estradiol was not implanted, was analyzed. This control series represents the same time period and the preceding year. Treated by hysterectomy with preservation of ovarian tissue at an average age of 39 years, 18 per cent of the patients complained of flushes within three months after operation. Treated by hysterectomy with extirpation of both ovaries but without implantation of estradiol at an average age of 43, 85.5 per cent complained of flushes sufficiently severe to require treatment within one to six months.

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[*] Progynon Pellets (Schering Corporation) supplied through the courtesy of Dr. W. H. Stoner and Dr. Edward Henderson

COMMENT

This paper is not concerned with the question of preservation of an ovary or ovaries at the time of surgical removal of the uterus This matter is a question of the operating surgeon's judgment in the individual case The acute menopausal symptoms that do occur after surgical extirpation of both ovaries are noted more often in women who have had no previous menopausal symptoms than in those of whom the opposite is true The incidence of subjective complaints after such operations is high These may be extremely annoying and require frequent and prolonged treatment by conventional methods

Review of the literature reveals that implantation of estrogens subcutaneously is a safe, simple and satisfactory procedure in treatment of the symptoms of a normal menopause Subcutaneous implantation of estradiol, performed at the time of operation, is offered as a method that virtually eliminates the occurrence of the acute postsurgical menopausal syndrome

It is difficult to evaluate the apparent prolonged activity of the implanted pellets As has been noted, various observers report relief of symptoms in both natural and surgical menopause for three to eleven months[16] In our series 96 per cent of the patients were symptom-free for at least six months and 92 per cent had no subjective complaints after eighteen months This prolonged activity may be associated with slow absorption due to implantation in a bed of fat The patient thus is tided over a prolonged transitional phase as with a well adjusted spontaneous menopause The objective data on an active vaginal smear over extended periods may be due also to such prolonged slow absorption Additional studies will be undertaken for the purpose of exploring further this prolonged activity In this series there was a general parallelism between the presence of some estrogen activity as determined by vaginal smear and the continued absence of acute menopausal symptoms This relation is only grossly qualitative and is of no value as an index to the need for treatment De-Allende and Orias[17] commented " after complete castration the vaginal picture does not exhibit such extreme degrees of atrophy as may be encountered in other conditions This fact suggests that the vaginal epithelium possesses a basal power of development which is independent of the ovarian estrogenic hormones The ovarian hormones exert their proliferative effect over and above this basal level"

PROTOCOLS

CASE 1—J N, aged 49 white, married para 3 Severe menorrhagia, multiple myoma, no preoperative menopausal symptoms Operation (complete abdominal hysterectomy bilateral salpingo oophorectomy) Mar 9, 1949, 50 mg estradiol implanted

Postoperative course, subjective no flushes no emotional changes, no medication after one year

Postoperative course, objective vaginal smear *stimulation fair, 40 per cent cornification, fair estrogen stimulation

CASE 2—M J, aged 41, white married para 0 No presenting complaints, multiple myoma extending from cul de sac to umbilicus discovered during routine examination Operation (complete abdominal hysterectomy, bilateral salpingo oophorectomy) Apr 12, 1949, 50 mg estradiol implanted

Postoperative course, subjective no flushes, no emotional changes, more energy after one year, no flushes, some nervous tension at eighteen months

Postoperative course, objective vaginal smear 4/15/50 (one year) stimulation poor, majority of cells precornified cornification practically nil Status poor estrogen stimulation

CASE 3—S K, aged 49, white, married, para 2 Increasing menorrhagia no preoperative menopausal symptoms, multiple myoma with degeneration Operation (complete abdominal hysterectomy, bilateral salpingo oophorectomy) Apr 19, 1949, 50 mg estradiol implanted

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*Vaginal smears stained with polychrome stain and read as unknowns in the Cytology Laboratory of the Department of Obstetrics and Gynecology Washington University School of Medicine

Postoperative course, subjective: feels well, no flushes one year later.

Postoperative course, objective: vaginal smear 1/12/50 (nine months): clean smear, with good epithelial desquamation, 10 per cent cornification, uncornified cells show evidence of estrogen stimulation, no cells from basal layers noted. Vaginal smear 4/11/50: epithelial desquamation scant, stimulation poor, cornification less than 5 per cent. Status: poor estrogen stimulation.

CASE 4.—V. E., aged 38, white, married, para 0. Increasing menorrhagia and severe dysmenorrhea, multiple myoma, no preoperative menopausal symptoms. Operation (complete abdominal hysterectomy, bilateral salpingo-oophorectomy) May 11, 1949; 50 mg. estradiol implanted.

Postoperative course, subjective: excellent, no flushes, no emotional distress at twelve months. In January 1951 patient noted occasional cold sweat, not requiring treatment.

Postoperative course, objective: vaginal smear 2/21/50: stimulation fair, with approximately 40 per cent cornification. Status: fair estrogen stimulation. Vaginal smear 5/26/50: increased stimulation, with about 50 per cent cornification. Status: fair to good estrogen stimulation.

CASE 5.—E. L., aged 48, white, married, para 0, salesperson. Pelvic pressure, bladder pressure with dysuria, increasing menorrhagia, no flushes, multiple myoma uterus, descensus 1 degree. Operation (complete abdominal hysterectomy, bilateral salpingo-oophorectomy) May 18, 1949; 50 mg. estradiol implanted.

Postoperative course, subjective: feels well, working full schedule, no flushes, no medications after one year.

Postoperative course, objective: vaginal smear 5/25/50: stimulation fair with approximately 30 to 40 per cent cornification, basal cells rare. Status: fair estrogen stimulation.

CASE 6.—A. P., aged 45, white, married, para 2. Under observation for three years complaining of backache, premenstrual pain, severe nervous tension—worse premenstrually, meno-metrorrhagia. Operation for adenomyosis (complete abdominal hysterectomy, bilateral salpingo-oophorectomy) May 28, 1949; 50 mg. estradiol implanted.

Postoperative course, subjective: nervousness persisted, no flushes. After eighteen months noted occasional flush, averaging possibly once a day.

Postoperative course, objective: vaginal smear 4/4/50 (eleven months): stimulation fair with 30 per cent cornification, outer basal cells rare. Status: fair estrogen stimulation.

This patient presents the multiplicity of complaints and the minimal (but definite) observations which often result in a continuation of the preoperative syndrome. The result here was most gratifying.

CASE 7.—B. H., aged 40, white, married, para 1, dancing teacher. Pelvic pressure, dysuria, marked nervous tension, no flushes. Operation for myoma uterus (complete abdominal hysterectomy, removal of remaining tube and ovary) June 1, 1949; 75 mg. estradiol implanted.

Postoperative course, subjective: after two years no flushes, well balanced, less nervous.

Postoperative course, objective: preoperative vaginal smear: stimulation fair, with approximately 50 per cent cornification, basal cells rare. Vaginal smear 5/14/50 (nine months): stimulation poor, cornification practically nil, majority of cells outer basal. Status: menopausal changes. Vaginal smear 5/23/50 (one year): increasing stimulation as compared to previous smears, cornification approximately 10 per cent. Status: menopausal changes.

CASE 8.—V. M., aged 34, white, married, para 0. Pain in lower part of abdomen pain, pelvic inflammatory disease with disability, no flushes. Operation for papillary cystadenoma; chronic salpingistis (complete abdominal hysterectomy, bilateral salpingo-oophorectomy) July 14, 1949; 50 mg. estradiol implanted.

Postoperative course, subjective: no flushes, feels well at one year. No smears made.

CASE 9.—A. J., aged 44, white, married, para 0. Menorrhagia, metrorrhagia, pressure symptoms. Under observation one year with progressive increase in symptoms and progressive increase in size of uterus. Operation for myoma uterus (complete abdominal hysterectomy, bilateral salpingo-oophorectomy) Sept. 28, 1949; 50 mg. estradiol implanted. No preoperative menopausal symptoms.

Postoperative course, subjective: flushes noted two months after operation, increased in severity so that therapy necessary after one year, with excellent response to estrogens. Patients will be treated by reimplantation of extradiol pellet.

Postoperative course, objective: vaginal smear 1/20/50 (four months) stimulation fair, with approximately 50 per cent cornification, cells either cornified or precornified, with rare outer basal cell present Status fair estrogen stimulation

CASE 10 —G M , aged 42, white, married, para 0 Menorrhagia, metrorrhagia, moderate flushes, 2 previous dilatations and curettements, myoma of uterus Operation (complete abdominal hysterectomy, bilateral salpingo-oophorectomy) Nov 5, 1949, 50 mg estradiol implanted

Postoperative course, subjective complete relief of flushes at eighteen months, some nervous tension

Postoperative course, objective vaginal smear 4/11/50 (six months) stimulation poor, with no cornification, majority of cells outer basal, with some larger precornified cells (40) Status poor estrogen stimulation

CASE 11 —B C , aged 36, white, married, para 0 Abdominal pain, irregular menses both early and late, no preoperative menopausal symptoms, chronic bilateral hydrosalpinx, myoma uterus Operation (complete abdominal hysterectomy, bilateral salpingo-oophorectomy) Dec 14, 1949, 50 mg estradiol implanted

Postoperative course, subjective feels well, no flushes at eighteen months

Postoperative course, objective vaginal smear 2/16/50 (two months) stimulation fair, with approximately 40 per cent cornification, outer basal cells rare Status fair estrogen stimulation Vaginal smear 4/18/50 (six months) decrease in estrogenic activity as compared with previous one, approximately 15 per cent cornification, many precornified cells, basal cells more common than on previous smear Status poor estrogen stimulation

CASE 12 —H G , aged 41, white, married, para 2 Menorrhagia, metrorrhagia, moderate flushes, myoma of uterus Operation (complete abdominal hysterectomy, bilateral salpingo oophorectomy) Dec 31, 1949, 50 mg estradiol implanted

Postoperative course, subjective no flushes at twelve months

Postoperative course, objective vaginal smear 2/21/50 (two months), increased cornification, approximately 65 per cent of cells cornified Status fair to good estrogen stimulation

CASE 13 —E F , aged 47, white, married, para 2 Prolapse with disability, preoperative myalgia, arthralgia, occasional flushes Operation (vaginal hysterectomy, bilateral salpingo oophorectomy) Jan 9, 1950, 50 mg estradiol implanted sub-vaginally

Postoperative course, subjective feels well at six months, joints less stiff, no flushes

Postoperative course, objective vaginal smear 2/25/50 (two months) stimulation fair, with about 20 per cent cornification, few basal cells present Status fair estrogen stimulation

CASE 14 —I G , aged 48, white, married, para 1 Severe menometrorrhagia, 2 previous dilatations and curettements, no flushes Operation for submucous myoma and retro displacement (complete abdominal hysterectomy, bilateral salpingo oophorectomy) Jan 17, 1950

Postoperative course, subjective no flushes fourteen months after operation

Postoperative course, objective vaginal smear 2/16/50 (one month) stimulation fair, with approximately 25 per cent cornification Status fair estrogen stimulation Vaginal smear 3/16/50 (two months) stimulation better than in previous smear, cells much larger, cornification approximately 40 per cent Status fair to good estrogen stimulation

CASE 15 —B S , aged 37, white, married, para 1 Severe menorrhagia, no preoperative menopausal symptoms, metrorrhagia with no response to androgen therapy, no flushes, previous dilatation and curettement, right salpingo-oophorectomy, 1932 Operation for myoma, removal of remaining tube and ovary (complete abdominal hysterectomy, left salpingo oophorectomy) Jan 5, 1950, 50 mg estradiol implanted

Postoperative course, subjective no flushes at fifteen months

Postoperative course, objective preoperative vaginal smear fair stimulation, cornification 20 per cent Status fair to poor estrogen stimulation Vaginal smear 2/18/50 (one month) excellent estrogenic activity, practically 100 per cent cornification of cells Status excellent estrogen stimulation Vaginal smear 11/14/50 (ten months) fair stimulation, with about 60 per cent cornification Status fair estrogen stimulation

CASE 16 —G I , aged 38, negress, married, para 2 Low abdominal pain, menorrhagia, previous cesarean, no flushes Operation for multiple myoma (complete abdominal hysterectomy, bilateral salpingo oophorectomy) Mar 22, 1950, 50 mg estradiol implanted

Postoperative course, subjective no flushes at nine months. No smears.

CASE 17.—R. G., aged 44, white, married, para. 2. Abdominal pain, menorrhagia, previous dilatation and curettement, moderate nervous tension, no flushes. Operation for subinvolution of uterus, polyp uterus (complete abdominal hysterectomy, bilateral salpingo-oophorectomy) Apr. 12, 1950; 50 mg. estradiol implanted.

Postoperative course, subjective: no flushes after one year, rather persistent occipatal headache. No smears.

CASE 18.—O. G., aged 43, negress, married, para. 0. Severe menometrorrhagia, no flushes. Operation for multiple myoma (complete abdominal hysterectomy, bilateral salpingo-oophorectomy) Apr. 5, 1950; 50 mg. estradiol implanted.

Postoperative course, subjective: no flushes after one year; teaching school regularly.

Postoperative course, objective: vaginal smear 5/29/50 (one year): stimulation good, with 70 per cent cornification. Status: good estrogen stimulation.

CASE 19.—A. S., aged 45, white, married, para. 3. Severe menorrhagia, with enlarged myomatous uterus, no flushes preoperatively. Operation for myoma uterus (complete abdominal hysterectomy, bilateral salpingo-oophorectomy) Oct. 25, 1950; 50 mg. estradiol implanted.

CASE 20.—A. F., aged 36, white, married, para. 2. Operation 1939 (salpingectomy for chronic hydrosalpinx), dilatation and curettement, 1947, for menorrhagia, persistent severe menorrhagia, with marked disability due to moderate descensus and subinvolution of uterus, nervous tension, no flushes. Operation (complete abdominal hysterectomy, right salpingo-oophorectomy) Nov. 13, 1950; 50 mg. estradiol implanted.

Postoperative course, subjective: no flushes no tension six months after operative. No smears.

CASE 21.—P. L., aged 49, white, married, para. 2. Menometrorrhagia, increasing in severity associated with enlarged nodular uterus, no flushes. Operation (complete abdominal hysterectomy, bilateral salpingo-oophorectomy) Nov. 20, 1950; 50 mg. estradiol implanted.

Postoperative course, subjective: no flushes after one year. No smears.

CASE 22.—F. S., aged 44, white, married, para. 1. Pain in lower part of abdomen, nervous tension, menometrorrhagia, dilatation and curettement, with persistent, irregular and profuse menses, no flushes. Operation (complete abdominal hysterectomy, bilateral salpingo-oophorectomy) Nov. 22, 1950; 50 mg. estradiol implanted.

Postoperative course, subjective: no flushes one year after operation. No smears.

CASE 23.—G. W., aged 49, white, married, para. 2. Recurrent profuse bleeding at menses, with irregular spotting between periods. Previous dilatation and curettement, without relief, androgen therapy, without relief, no flushes. Operation for subinvolution of uterus (complete abdominal hysterectomy, bilateral salpingo-oophorectomy) Dec. 5, 1950; 50 mg. estradiol implanted.

Postoperative course, subjective: no flushes after six months. No smears.

SUMMARY AND CONCLUSIONS

1. A series of 25 cases is reported, in which the patients were treated with estradiol pellets implanted at the time of operation.
2. Implantation of the pellets is a simple procedure.
3. No untoward effects have been noted.
4. Implantation of estradiol pellets offers a means of prolonged and continuous therapy.
5. In 96 per cent of this series the patients were subjectively free of menopausal symptoms for at least six months after the operation, and 92 per cent were symptom-free from eighteen months after the operation.
6. The selected dose in this series was 50 mg. of estradiol U.S.P.
7. The vaginal smear has been of no value as an index to therapy.

RÉSUMÉ ET CONCLUSIONS

1. On rapporte une série de 25 cas, à qui on implanta des cristaux d'oestradiol au moment de l'opération.
2. C'est une chose très simple à faire.
3. On a constaté aucune complication.
4. C'est un moyen de pratiquer une thérapeutique prolongée et continuelle à l'oestradiol.
5. Dans 96% des cas de cette série les

patientes n'eurent pas de symptômes subjectifs de menopause pour au moins 6 mois apres l'operation Dans 92% des cas cette absence de symptômes de menopause se prolongea jusqu'a 18 mois

6 La dose choisie etait de 50mgm d'oestradiol u s p

7 Le frottis vaginal n'a eu aucune valeur comme index therapeutique

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

1 Es wird ueber eine Reihe von 25 Kranken berichtet, an denen zur Zeit der Operation eine Einpflanzung von Estradiolpillen vorgenommen wurde

2 Die Einpflanzung der Pillen ist ein einfaches Verfahren

3 Keine unangenehmen Nebenwirkungen wurden beobachtet

4 Die Einpflanzung von Estradiolpillen stellt eine Form lang anhaltender stetiger Behandlung dar

5 96% der Kranken dieser Reihe waren nach der Operation mindestens 6 Monate lang subjektiv frei von klimakterischen Beschwerden, und 92% zeigten 18 Monate lang keinerlei Symptome

6 Die in diesen Faellen gewaehlte Dosis betrug 15 mg Estradiol (United States Pharmacopoeia)

7 Der Vaginalabstrich hat sich zur Indikationsstellung fuer die Behandlung als wertlos erwiesen

RESUMEN Y CONCLUSIONES

1 Se comunica una serie de 25 casos de pacientes tratadas con la implantacion de pellets de estradiol al ser operadas

2 La implantacion de pellets es un procedimiento sencillo

3 No se observo dingun efecto desagradable

4 La implantacion de pellets constituye una terapeutica continua y prolongada

5 El 96% de las pacientes de esta serie se encontraron subjetivamente libres de sintomas menopausicos durante 6 meses cuando menos y el 92% lo estuvieron 18 meses despues de la operacion

6 La dosis empleada en esta serie fue de 50 mg de estradiol (F E U)

7 El flujo vaginal no tuvo valor como indice terapeutico

SUMÁRIO E CONCLUSOES

1 E' relatada uma serie de 25 casos na qual os pacientes foram tratados com grãos de estradiol implantados ao tempo da operacão

2 A implantacão dos grãos é um processo simples

3 E'feitos desagradaveis não foram observados

4 A implantação de estradiol (grãos) oferece um meio de terapeutica continua e prolongada

5 Em 96 por cento desta serie os pacientes foram subjectivamente livertados de sintomas de menopausa pelo menos por 6 meses apos a operação e 92 por cento permaneceram livres de sintomas ate dezaito mezes depois da mesma

6 A dose selecionada nesta serie foi de 50 mg de estradiol U S P

7 O esfregaco vaginal não tem tido utilidada alguma como indice para terapeutica

CONCLUSIONI RIASSUNTIVE

1 Si riferisce su una serie di 25 casi nei quali le pazienti furono sottoposte all'impianto di compresse di estradiolo al momento dell'intervento

2 L'impianto e molto semplice

3 Non da luogo ad effetti sfavorevoli

4 Rappresenta un mezzo per continuare e prolungare la cura

5 Nel 96% dei casi trattati non comparvero segni di menopausa per 6 mesi dopo l'intevento, e nel 92% per 18 mesi

6 Si uso una dose di 50 mg di estradiolo U S P

7 Gli strisci vaginali non consentono giudizi sull'efficacia di tale cura

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Carcinoma of the Pancreas with Roentgen Pattern of Nontropical Sprue

Report of a Case

MEYER O CANTOR, M D, F A C S, AND LEONARD HAKING, M D
DETROIT

SMALL malignant lesions of the pancreas are extremely difficult to diagnose Islet cell tumors, by virtue of their insulin-secreting potentialities, can readily be diagnosed because of their effect on carbohydrate metabolism Small malignant lesions of the body of the pancreas, however, produce no secretion capable of causing a clinically detectable alteration in the body metabolism It is lesions of this type that seem so hopeless, because generally before a correct diagnosis is made metastasis has occurred Since the lesion is located in the body of the pancreas, biliary obstructive signs do not appear

This report is unusual because intractable diarrhea was the only presenting problem and because the roentgen picture was typical of nontropical sprue Because of this association all internists agreed that the diagnosis had been established

Buckstein[1] has pointed out that the typical pathologic picture of nontropical sprue may at times appear with carcinoma of the body of the pancreas [1] Broadbent and Kerman,[2] in a recent review of 100 cases of carcinoma of the pancreas, pointed out that compression, distortion, irregularity, rigidity and constant filling defects are the most common roentgenologic diagnostic observations suggesting carcinoma of the pancreas Displacement of associated anatomic structures and, at times, a roentgen picture almost identical with that of gastric carcinoma are noted Widening of the duodenal loop is not unusual, and at times a defect appears in the medial border of the descending duodenum

The case here reported is an excellent example of the type of case described by Buckstein as presenting all the pathognomonic roentgen signs of nontropical sprue In addition, during the operation there developed a cardiac arrest from which the patient recovered as a result of cardiac massage, only to die eighteen hours later Autopsy revealed a complete coronary occlusion with fresh extensive infarction

REPORT OF CASE

M M, a white woman aged 50, was admitted to the North Detroit General Hospital on Dec 22, 1950, complaining of epigastric distress, nausea and vomiting She had noted the onset of precordial distress three years previously, describing it as "heartburn" after meals, with occasional vomiting Despite medical treatment the distress became progressively worse with the passage of time For the month prior to admission this "heartburn" had become persistent, occurring after each meal and only temporarily relieved by alkali There was no blood in the vomitus at any time For the past year the bowel movements had been watery and had occurred four times a day She had lost 25 pounds 11 3 Kg during the past six months

The patient had had the usual childhood diseases and had undergone a pelvic operation of unknown type The menopause had taken place fifteen years before, and there had been no bleeding since The patient had two children living and well There was no history of cancer or tuberculosis in the family

Physical examination revealed the patient to be well developed There was evidence of marked loss in weight, the skin being extremely loose The temperature was 98 6 F, the pulse rate 84 and the respiratory rate 20

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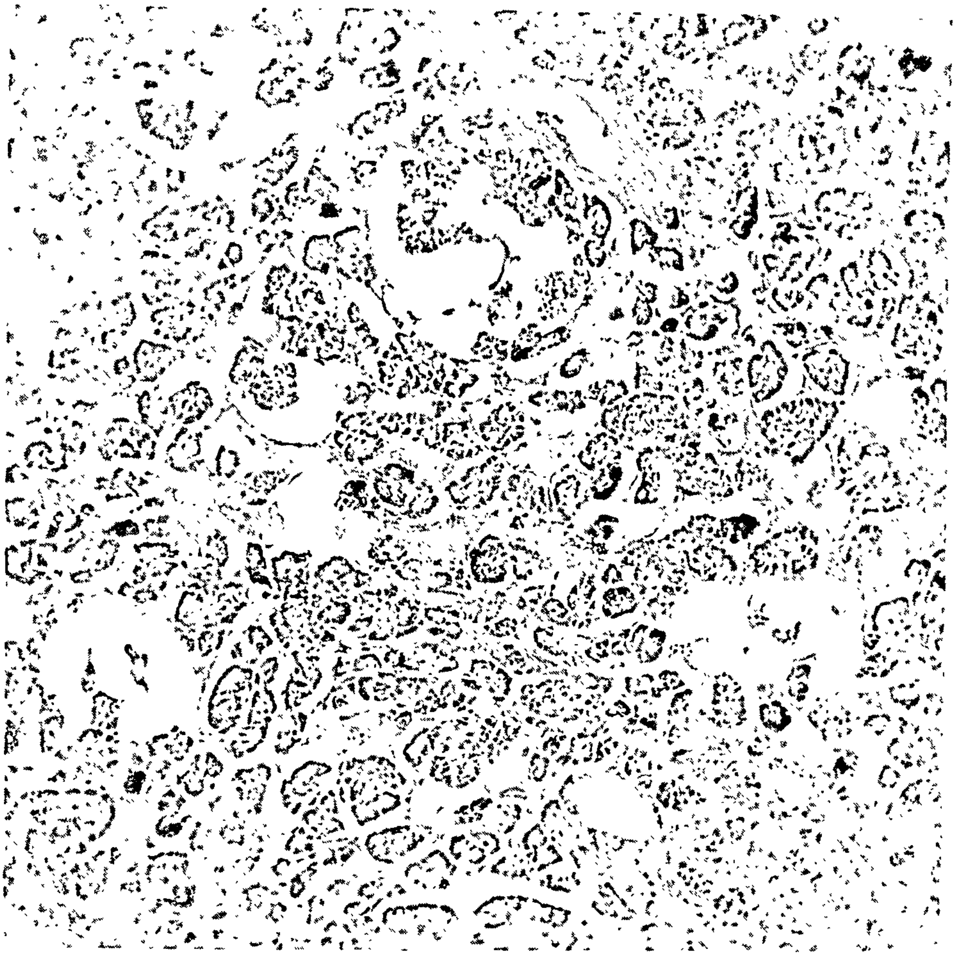

Fig. 1.—Photomicrograph showing segmentation, ironing out of contour of loop, areas of unusual dilatation and areas of abnormal mucosal relief.

Examination of the head showed normal eyes, nose and mouth. No glands were palpable in the neck.

There were no cardiac murmurs. The pulse rate was 80 and the rhythm normal. The blood pressure in millimeters of mercury was 110 systolic and 70 diastolic. The lungs were normal. The liver and spleen were not palpable. The pelvis and extremities were normal.

Examination of the small bowel was performed on Jan. 5, 1951, both fluoroscopically and roentgenographically. Films were obtained at half-hour intervals. The patient was observed over a period of about four hours, after which time it was impracticable for her to remain in the department and the barium had still failed to reach the cecum. This is interpreted as indicating a definite delay in the movement of the barium from the gastroduodenal area to the cecum. We noted a corroboration of our previous observations, as the first unusual features are the somewhat exaggerated mucosal folds in the first part of the jejunum. From here we observed a progression into the ileum and the lower portion of the jejunum in the left side of the abdomen. In this area the mucosal pattern was not normal. There was also a tendency toward so-called flocculation of the barium in temporarily dilated portions of the small bowel. These observations, that is, loss of the normal mucosal pattern and a tendency toward puddling of the barium in portions of the bowel in this area, in association with the increased time required for the barium to pass through the small bowel to the cecum, are often associated with nontropical sprue.

The conclusion was that there existed a rather marked disturbance in function of the portion of the small bowel adjacent to the jejunum. There was also an exaggeration of

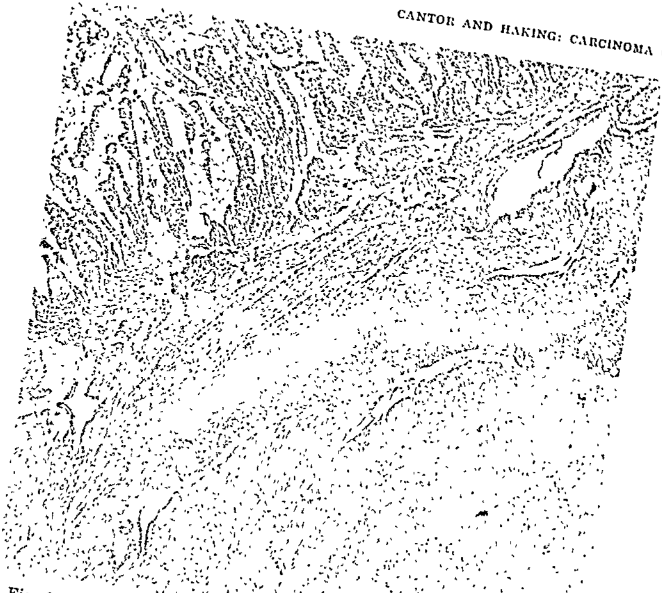

Fig. 2.—Histopathologic appearance of adenocarcinoma of the pancreas.

the jejunal folds, and initially we observed a so-called flocculation of the barium. These data, associated with other features, led us to the opinion that the patient probably had a form of nontropical sprue (Dr. McDonald, roentgenologist).

A barium enema revealed no pathologic change in the large bowel except a few diverticula of the pelvic portion of the colon. The last 8 inches (20 cm.) of the teminal portion of the ileum was filled refluxly, but no disease was observed.

The electrocardiogram showed a normal curve. The value for serum amylase was 75 mm. A dextrose tolerance test revealed a fasting value of 109, with a trace of sugar in the urine. At one hour the first-mentioned value was 290 and the urine reaction 4 plus. At two hours the values were 200 and 4 plus respectively. At three hours both had receded to 155 and 1 plus respectively. The urine was yellow and slightly cloudy, with an acid reaction. There was a trace of albumin but no sugar. The sediment revealed many white blood cells. There were no ova and no parasites in the stools. The Gmelin test for unchanged bile gave negative results; the test for changed bile, positive results.

The value for blood calcium was 11.6 mg. The erythrocyte count was 5,250,000 per cubic millimeter of blood, with 15.1 Gm. of hemoglobin. The leukocyte count was 8,500, with 87 per cent polymorphonuclears and 13 per cent lymphocytes.

The patient was given injections of crude liver and a bland, high vitamin diet. She showed a decided improvement under this regime. She was discharged on January 8 greatly improved, although the diarrhea had not completely subsided.

She was readmitted on February 5, complaining chiefly of diarrhea. She had continued to improve for one week after her discharge and had gained 8 pounds (3.6 Kg.).

After that, the diarrhea began again, so that for a week she had had seven bowel movements a day. The stools were liquid and greenish. No mucus or blood was observed.

The temperature was 98.6 F., the pulse rate 80 and the respiratory rate 20. Examination revealed no abnormalities other than those noted at the previous admission. The Kahn reaction was negative. The fasting value for blood sugar was 105. The erythrocyte count was 3,610,000 per cubic millimeter of blood, with 69 per cent hemoglobin; the leukocyte count 3,750, with 69 per cent polymorphonuclears and 31 per cent lymphocytes. The urine was normal.

Injections of liver and a high vitamin diet were again instituted, and again the patient showed marked improvement. She was discharged February 11.

Her second readmission took place on March 3, the chief complaint being diarrhea. After her second discharge from the hospital she had felt much better; the diarrhea had decreased to two or three bowel movements a day. This period of well-being was short; one week later the diarrhea returned, accompanied by nausea and vomiting, and she was admitted to the hospital for the third time.

The temperature and pulse rate were normal. There was evidence of considerable weight loss but no apparent discomfort. Examination showed no change from the conditions previously observed.

The Mantoux test gave a negative result. The cholesterol level was 235 mg. The value for total protein was 7.1 Gm. per hundred cubic centimeters, with 4.4 Gm. of albumin and 2.7 Gm. of globulin. The value for blood chlorides was 463 mmg. Culture of the stool revealed a growth of paracolon bacilli (Escherichia coli) and Streptococcus faecalis. The red blood cell count was 3,940,000 per cubic millimeter, with 11.7 Gm. of hemoglobin; the differential leukocyte count showed 87 per cent polymorphonuclears and 12 per cent lymphocytes. The basal metabolic rate was plus 37 per cent. The value for serum lipsae was 0.8 cc. The results of the Widal test were negative. Agglutination for typhoid, paratyphoid and Malta fever also gave negative results.

The dextrose tolerance test revealed a fasting value of 153, and there was a trace of sugar in the urine. At one hour these values were 300 and 3 plus respectively; at two hours, 275 and 2 plus, and at three hours, 235 and 1 plus. Gastric analysis revealed a fasting value of 0 for free and 16 for total hydrochloric acid. At fifteen minutes these values were 0 and 3 respectively, the same levels being observed again at thirty minutes. At forty-five minutes and again at sixty minutes these values were 0 and 6 respectively.

Despite a high caloric, high vitamin diet and injections of crude liver supplemented by nicotinamide, the patient showed a slowly progressive deterioration. On March 3, it was decided that exploratory laparotomy was indicated. A presumptive diagnosis of pancreatic lesion, possibly a small cyst or carcinoma, was made.

On March 26 the patient was taken to the operating room. General anesthesia was induced with nitrous oxide etheroxygen, and the abdomen was opened. When the peritoneal cavity was entered, the gastrocolic omentum was opened, exposing a cystic tumor in the pancreas at the junction of the middle and distal thirds. During dissection of this cystic tumor, the cardiac arrest suddenly developed. Cardiac massage (transdiaphragmatic) resulted in restoration of the heartbeat. Because of the condition of the patient, the

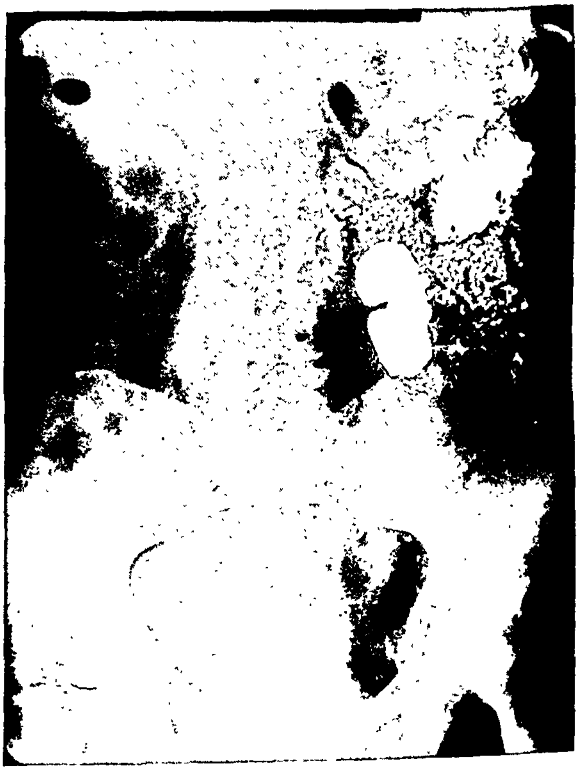

Fig. 3.—Coronary artery, showing thrombus firmly attached.

dome of the cyst was removed and a soft rubber drain placed within the cyst cavity The abdomen was closed The patient was returned to her room in fair condition The next day acute pulmonary edema suddenly developed, and the patient died At autopsy the cystic tumor of the pancreas was found to be an adenocarcinoma The tumor was 4 inches (10 cm) in diameter at its base and was cystic on its anterior surface The anterior cyst wall had been removed at operation and a drain inserted into the cyst cavity Examination of the heart showed marked coronary atheromatous changes The coronary arteries were both so much narrowed that only a hair sized lumen remained A recent large infarct was observed on the anterior wall of the heart

Examination of other organs showed no pathologic change The diagnosis was recent massive coronary occlusion with infarction and adenocarcinoma of the pancreas (Dr Frita)

SUMMARY AND CONCLUSIONS

This case demonstrates well the difficulties in diagnosis when the patient has a small malignant lesion of the body of the pancreas The clinical and roentgen manifestations were those of nontropical sprue Diarrhea was the most persistent and most troublesome symptom

It would seem wise to resort to exploratory laparotomy in any such case in which an erroneous roentgen diagnosis has been made and appropriate therapy given without result This is indicated particularly when the roentgenologist reports an identical picture uncommonly associated with carcinoma of the body of the pancreas

The following conclusions are drawn 1 Carcinoma of the body of the pancreas may produce a clinical and roentgen picture of nontropical sprue 2 Coronary occlusion may cause cardiac arrest and result in death despite restoration of the heartbeat by cardiac massage

RESUMÉ ET CONCLUSIONS

Le cas ici rapporte illustre bien les difficultes de poser le diagnostic de tumeur même du corps du pancreas Les signes cliniques et radiologiques etaient ceux de l'aphte non tropicale Le symptôme le plus ennuyeux et le plus tenace etant la diarrhee Tous les efforts pour l'enrayer furent vains Les patients sont habituellement sous traitement medical avant que l'autopsie ne revele la lesion Une laparotomie exploratrice serait tres indiquee dans ces cas pour porter un diagnostic precis, surtout si les examens aux Rayons-X sont insuffisants Ceci s'impose davantage si les cliches radiologiques ressemblent a un cancer du corps du pancreas Les conclusions suivantes s'imposent Le cancer du corps du pancreas peut donner un syndrome clinique et radiologique semblable a l'aphte non tropicale 2 L'obstruction coronarienne peut amener un arrêt du coeur et amener la mort malgre des tentatives, par massage, de stimulation cardiaque

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

Der hier veroeffentlichte Fall beleuchtet die diagnostischen Schwierigkeiten bei einem Kranken mit einer kleinen boesartigen Veraenderung im Koerper der Bauchspeicheldruese Die klinischen und roentgenologischen Erscheinungen waren die einer nichttropischen Sprue Das hartnaeckigste und laestigste Symptom war Diarrhoe Diese machte alle Bemuehungen, zu einer spezifischen Diagnose zu gelangen, zunichte Solche Kranke werden gewoehnlich eine Zeit lang medizinisch behandelt, bis der ploetzliche Tod oder die Obduktion den wahren Sachverhalt aufklaert Vielleicht ist es ratsam in allen Faellen, wo eine irrtuemliche Roentgendiagnose vorliegt und entsprechende therapeutische Massnahmen ohne Erfolg angewandt worden sind, zur Probelaparotomie zu schreiten Dies ist besonders angezeigt, wenn der Roentgenologe einen Befund abgibt, der dem hier beschriebenen entspricht, und der im allgemeinen in Verbindung mit Karzinom des Pankreaskoerpers nicht vorkommt

Die folgenden Schlussfolgerungen werden gezogen (1) Der Krebs des Bauch-

speicheldruesenkoerpers kann unter den klinischen Erscheinungen und unter dem Roentgenbilde der nichttropischen Sprue auftreten. (2) Ein Kranzaderverschluss kann zum Herzstillstand und zum Tode fuehren, auch wenn die Herztaetigkeit durch Herzmassage wieder in Gang gebracht wird.

RESUMEN Y CONCLUSIONES

El caso presentado demuestra bien las dificultades para el diagnóstico, cuando se trata de una pequeña lesión maligna del cuerpo del páncreas. Las manifestaciones clínicas y röntgenológicas fueron las del esprúo no tropical. El síntoma más molesto y persistente fué la diarrea. Esta desafió todos los esfuerzos para llegar a un diagnóstico específico. Dichos pacientes son tratados de ordinario médicamente por algún tiempo, antes de que la muerte repentina o la autopsia aclaren el verdadero estado. Sería conveniente recurrir a la laparotomía exploradora en caso de diagnóstico röntgen erróneo y terapéutica apropiada sin resultado. Esto está indicado cuando el röntgenólogo comunica un cuadro idéntico asociado no ordinariamente con carcinoma del cuerpo del páncreas.

Se derivan las siguientes conclusiones: 1. El carcinoma del cuerpo del páncreas puede producir un cuadro clínico y röntgenológico de esprúo no tropical. 2. La oclusión coronaria puede causar paro cardíaco y la muerte por consiguiente, a persar de restaurar el latido cardíaco por masaje del corazón.

RIASSUNTO E CONCLUSIONI

Il caso qui presentato dimostra bene le difficolta' diagnostiche con minime lesioni maligne del corpo del pancreas. Le manifestazioni cliniche e radiologiche sono quelle della sprue non tropicale. La diarrea e' il sintomo piu' persistente e noioso. Questa depisto' la diagnosi. Tali pazienti sono di solito trattati medicalmente per qualche tempo finche' la morte improvvisa o l'autopsia svelo' la giusta diagnosi. Sarebbe saggio ricorrere alla laporotomia esplorativa in ogni caso in cui una errata diagnosi radiologica e' seguita da terapia appropriata senza risultati. Questo e' indicato particolarmente quando il radiologo riporta un quadro radiologico non comunemente associato con il carcinoma del corpo del pancreas. Conclusioni: 1. Il carcinoma del corpo del pancreas puo' presentare un quadro clinico e radiologico di sprue non tropicale.

2. L'occlusione coronarica puo' produrre l'arresto cardiaco e risultare in morte malgrado la restaurazione del battito cardiaco a mezzo di massaggio diretto.

SUMÁRIO E CONCLUSÒES

O caso agui apresentado demonstra bem as dificuldades de diagnostico guando o paciente tem uma peguena lesão maligna do côrpo do pâncreas. As manifestações clinicas e radiologicas são aguelas do sprue não tropical. A diarreia foi o sintoma mais persistente e mais perturbador. Essa diarreia desafiou todos os esforços feitos para se chegar a um diagnostico especifico. Fais pacientes são usualmente tratados clinicamente por algum tempo até gue uma morte súbita ou uma autópsia revelam a verdadeira condição Parece de bom conselho indicar laparotomia escploradôra em todos os casos nos guais um diagnostico radiologico erroneo tem sido feito e em gue uma terapeutica apropriada não deu nenhum resultado. Tsso é particularmente indicado guando o relatorio do radiologista sugere essa possibilidade.

As seguintes conclusões são esboçadas: (1) O carcinoma do corpo do pancreas póde produzir um guadro clinico e radiologico de sprue não tropical. (2) A oclusão coronaria póde causar paráda do coração e resultar em morte á despeito da restauração dos batimentos pela massagem cardiaca.

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Difficult Hernias: Use of Tantalum Mesh in Repair

AMOS R. KOONTZ, M.D., F.A.C.S.
BALTIMORE

AT an important surgical meeting recently, a leading surgeon, commenting on the use of tantalum mesh or cutis grafts for repair of hernia, said, "Why use these foreign materials? Why try to improve on the Lord's handiwork? Why not use fascia, which is available, for these repairs?" Unquestionably fascia—both autogenous and preserved—has done us yeoman service in the past in the repair of difficult hernias. It does, however, have certain drawbacks. It has to be revascularized, it has tensile strength in only one direction, and it sloughs out in the presence of infection. Besides, in the presence of a very large hernia there is not enough fascia available to repair the defects. Could enough be brought from distant places in sundry sizes and shapes, the pieces patched together would not be strong enough to repair some of the enormous defects encountered by the surgeon.

Unfortunately mere surgeons have occasionally to take up where the Lord leaves off, and in so doing they are glad to use any material at hand. The experimental work that formed the basis for the use of tantalum mesh, as well as the technic of its use, have been described in several previous papers[1] and will not be dwelt upon here. Instead, I shall discuss the clinical uses of the material in the repair of difficult hernias.

Some of the important conditions for which tantalum mesh is used in repairing defects in the abdominal wall are as follows:

1. Ventral hernias:
   (a) To close defects in which the fascial edges cannot be approximated.
   (b) To reinforce weak suture lines which in themselves are not strong enough to insure cure of the hernia. In such cases a large piece of mesh should be used to cover the entire area in which the fascia is weak.
2. Inguinal hernias with poor tissues and large defects, especially recurrent inguinal hernias.
3. Congenital absence of the abdominal wall.
4. Surgical defects of the abdominal wall caused by resection of large abdominal wall tumors.
5. Lumbar hernias.
6. Eventrations of the diaphragm and diaphragmatic hernias.

Ventral Hernias.—The majority of ventral hernias occur in obese persons, some of whom are very fat indeed. In a great many of them the defect is extremely large, and it is difficult to reduce the contents of the sac at operation. The patients are much more uncomfortable than is generally believed. Some of them are made invalids by their condition. No satisfactory belt or truss can be obtained for giving them relief. Indeed, they can only sit around and hold in their abdominal contents manually. Many of them not only have the feeling of insecurity occasioned by the large defect in the abdominal wall and the consequent unpleasant dragged-down sensation, but have nausea, vomiting and other disagreeable symptoms as well. Some have partial intestinal obstruction.

In some cases of ventral hernia the

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fascia surrounding the defect is strong. In these cases it is not necessary to overlap the edges of the defect to any great extent with the tantalum mesh, even if the edges of the defect itself cannot be approximated.

In a great many patients, however, especially if they are obese, the entire abdominal fascia is poor. Even if the edges of the defect can be approximated, one is sure that simple approximation of the weak fascial edges will not cure the hernia. In some very obese persons fat literally oozes between the interstices of the fascia. In these circumstances the weakened fascia should be covered with tantalum mesh over a wide area beyond the edges of the defect. In 1 such patient, on whom I operated about six months ago (a huge man with a huge hernia), a piece of tantalum mesh 12 by 12 inches (33 by 33 cm.) was emplaced so as to cover almost the entire abdominal wall.

I have used tantalum mesh in 77 operations on large ventral hernias. In repairing defects in 5 of my early cases a piece of mesh entirely too small was used to reinforce the suture line, which was surrounded by weak abdominal fascia. Entirely new hernias occurred at the edge of the implanted piece of tantalum mesh —so-called false recurrences. In all of these cases the original hernia remained cured, and at the second operation the site of the original hernia was noted to be extremely firm. These cases illustrate the necessity of reinforcing weak fascial edges well beyond the site of the original hernia. There have been no other recurrences.

The results with tantalum mesh were so good and so striking that I was emboldened to operate on hernias which I do not believe could have been cured by any of the ordinary methods hitherto available. The series of cases reported here includes a number of this type, in several of which two or three previous attempts had been made at repair by excellent surgeons using the older methods. A case illustrative of the large type of defect is that of a 39-year-old woman who had undergone an operation about a year and a half earlier for cancer of the bladder involving the ileum. A total cystectomy had been done, with removal of all the pelvic generative organs and 3 feet (91.4 cm.) of ileum. The ureters had been transplanted into the sigmoid. The operation had been performed through a transverse incision and the abdominal muscles and fascia had retracted upward and downward until the defect extended from the umbilicus to the symphysis, and laterally in each direction to the inguinal canal. There was little or nothing below the patient's umbilicus in the nature of an abdominal wall except skin, subcutaneous tissue and peritoneum. The defect was repaired by suturing in an enormous piece of tantalum mesh covering the entire lower part of the abdomen. This operation was performed almost three years ago, and the patient still has a strong closure. There have been several other cases in which the defects were equally large. I do not believe that these patients could have been successfully treated with fascia flaps, free transplants of fascia, either autogenous or preserved, or cutis grafts. The defects were too large, in my opinion, for the successful use of these materials.

Inguinal Hernias.—Recurrences following the repair of inguinal hernia have long been the bugaboo of the surgeon. No surgeon, no matter how skillful, can tell a patient with a hernia that an operation will certainly cure him. This is disconcerting to the surgeon and discouraging to the patient. The large number of recurrences encountered is an eloquent indictment of surgical failures. The efforts of surgeons to reduce the number of recurrences is attested to by the large number of innovations that have appeared almost yearly since publication of the monumental works of Halsted and Bassini more than sixty years ago. These efforts are laudable, and some have met with a high degree of success. None has been universally successful. Any new method introduced has to be modified, as time goes on, by the experience of its originator. This is also true of the use of tantalum mesh.

The material is especially useful for inguinal hernias with poor tissues and large defects. I have now used it for 96 such hernias, most of which were recurrent. A few of the patients had been operated upon as many as six times before. There have been 2 recurrences, both of which, in my opinion, were due to faulty early use of the material. In the early cases only a very narrow strip of tantalum mesh was used to cover the first suture line (generally the conjoined tendon to Cooper's ligament). Both of these recurrent defects were repaired with adequate pieces of mesh. It is now obvious that the whole Hesselbach's triangle area should be reinforced with tantalum mesh. The luxuriant growth of fibrous tissue through and around the mesh forms an adequate buttress in this area, through which hernias are most likely to recur. (Tantalum appears to stimulate the growth of fibrous tissue, but this has not yet been proved experimentally.) Although it is too early for complete evaluation of the results, I am convinced that the method will enable surgeons to cure inguinal hernias permanently, even those which have hitherto been considered inoperable. I have successfully operated upon several patients who had been pronounced inoperable by excellent surgeons.

Congenital Absence of the Abdominal Wall.—I was once confronted with the problem of a 4-year-old child with congenital absence of the muscular and fascial structures of the upper half of the abdominal wall. As a result of this condition the child was an invalid and could not play with other children of his age. Tantalum mesh seemed the logical material with which to make the repair. However, it was not known whether the mesh would cause a contracture as the child grew. Experiments were resorted to. A corresponding portion of the muscle and fascia of the abdominal wall in puppies was resected and the defect repaired by suturing in tantalum mesh. The mortality rate was high among these animals, as puppies tolerate experimentation poorly. Some of them, however, lived to be adult dogs, and in only 1 was there any evidence of contracture, although the mesh had been sutured to the ribs above in all instances.[2]

The child was then operated on, and it was observed that there was nothing but skin and peritoneum in the defective area. There was no subcutaneous tissue and no preperitoneal tissue. The skin was tightly glued to the peritoneum, and it was very difficult to separate the two, so that during the separation each structure was "buttonholed" in several places. Concern was felt about placing the tantalum mesh between the two thin structures. However, it was so placed and fortunately "took". This patient was operated on three and one-half years ago, and the result is excellent. Immediately after operation the child abandoned the role of an invalid and for the first time began to play normally with other children.

Repair of the Abdominal Wall After Resection of Large Abdominal Wall Tumors.—When I first began to use tantalum mesh for the repair of ventral hernias, it became obvious that cases would be encountered sooner or later in which the peritoneum could not be closed. Indeed, in an early case of hernia resulting from a gunshot wound, there were so many loops of bowel adherent to the sac that after they had been separated there was barely enough peritoneum left to close. Experiments were conducted, therefore,[6] to determine what would happen if tantalum mesh were placed next to the bowel. Large defects were created in the abdominal walls of dogs by removing all of the wall except the skin and subcutaneous tissue. The spleen and the greater omentum were also removed so that there would be no buffer between the intestines and the mesh. Subsequent examination of these animals showed that the inner surface of the mesh had been peritonealized. There were only mild adhesions between loops of intestine and the tantalum, and these could be easily pushed away with a piece of gauze. There were no obstructive symptoms, and the adhesions in no way interferred with the health of the animals.

Shortly after these experiments were completed, a patient came to me[3] for removal of a large melanoma of the abdominal wall which involved the umbilicus. During dissection to free the tumor, all the abdominal fascia in the area, part of the muscle, and a large piece of peritoneum surrounding the umbilicus were removed. The resulting defect in the abdominal wall was repaired with tantalum mesh by placing the mesh immediately adjacent to the bowel. The patient had a short omentum which could not be brought down to cover the intestines. This patient was operated on two years ago, has been perfectly well since, and has had no abnormal complaints or any other evidence of inconvenience as a result of placing the tantalum next to the bowel. Bussabarger, Dumouchel and Ivy,[4] and Crile and King[5] have reported similar cases.

Lumbar Hernias.—Postoperative lumbar hernias, especially those following several operations on infected kidneys, are difficult to cure. Since I have been using tantalum mesh, I have had occasion to operate on 2 such hernias but did not use mesh in the repair for fear that the unusual amount of bending to which the mesh would be subjected in that region might cause an unfavorable result. In both cases I used Dowd's operation, which was the procedure I had always used in the pre-tantalum mesh era. Although Dowd's procedure is satisfactory and gives excellent results in eliminating the hernia, it does leave some diffuse bulging of the abdominal wall in that area, especially in those cases in which the fascial and muscular structures are completely gone from the lower costal margin to the crest of the ilium. In the 2 recent cases mentioned I was tempted to reinforce the fascial flaps used in the Dowd's operation with tantalum mesh, but did not do so for the reason given. I did, however, reinforce them with whole thickness skin grafts, with a satisfactory result. About a year ago, however, Dr. E. H. Richardson[6] used tantalum mesh in the repair of a lumbar hernia without any untoward results.

Eventration of the Diaphragm and Diaphragmatic Hernias.—Monahan[7] has recently reported an excellent result in the cure of a large eventration of the diaphragm by plicating the thin wall of the diaphragm and then reinforcing it with tantalum mesh. He has also reported[8] the repair of a congenital diaphragmatic hernia in an infant with tantalum mesh. The child died of atelectasis and aspiration pneumonia two weeks after the operation. Autopsy showed that the tantalum had been covered with a "membrane" (probably pleura) and the lung was not adherent to it.

Tantalum Mesh and Infection.—An early question was "What would happen to tantalum mesh in the presence of infection." Experiments were conducted[1e] to determine this. Artificially produced defects in the abdominal walls of animals, repaired with tantalum mesh, were grossly infected experimentally, and healed spontaneously provided silk or cotton had not been used in the wounds. If tantalum wire (either monofilament or braided) was used for suture material and catgut for ligatures, the infection rapidly disappeared and healing and effective repair of the abdominal wall were just as good as if no infection had taken place. If silk or cotton had been used in the presence of infection, a persistent sinus tract ensued.

As a result of this experimental work, several patients with contaminated wounds, were operated on without hesitation, even though it was felt that infection would probably follow operation. Some of the wounds did become grossly infected after operation but healed without sinus tract formation and with a strong repair of the hernia in spite of the infection. In 1 instance silk was used to close the peritoneum and a sinus tract persisted for ten months—until the offending silk suture was removed. Silk instead of tantalum wire was used to close the peritoneum in this case because it was thought likely that the wire would cut through. Since then braided tantalum wire has been developed, and because it does not tend to cut through the peritoneum any more than silk, I recommend its use for peritoneal closure. Braided tantalum wire has been shown experimentally to cause no more trouble in the presence of infection than does monofilament wire.

Tantalum Mesh in an Open Wound.—Necrosis of part of a skin flap was encountered in 1 patient, a huge woman with a large ventral hernia. Owing to the thickness of the panniculus and the poor circulation after wide dissection of the skin flaps, there developed an area of necrosis of the skin and fat 2 inches in diameter. This area was many inches deep and had to be cut away, which left an area of mesh exposed. Granulations could soon be seen growing through the mesh, and the entire area gradually closed. Wright[9] has reported a similar case, as have Bussabarger, Dumouchel and Ivy.[4]

SUMMARY

One hundred and seventy-three patients with difficult ventral and inguinal hernias have been operated on over a period of five and one-half years. There have been no untoward results, and in no case has it been necessary to remove the mesh.

There were 5 cases of so-called false recurrence in the series of 77 ventral hernias. In each of these cases the site of the original hernia remained intact, but a new hernia developed in the weak fascia at the edge of the implanted mesh. This could have been eliminated had the piece of mesh used in the first place been large enough to cover the entire weakened area.

In the series of 96 cases of inguinal hernias associated with poor tissues and large defects, mostly recurrent, there were 2 recurrences. Both took place in early cases in which only a narrow strip of tantalum mesh had been used to reinforce the first suture line. It has now become apparent that the entire area of Hesselbach's triangle should be so reinforced.

RÉSUME

173 patients furent opérés pour hernie inguinale et ventrale difficiles durant une période de 5½ ans. Il n'y eut pas de mauvais résultats et dans aucun cas fut-il nécessaire d'enlever le "mesh" (grillage). Il y eut 5 cas de soi-disant fausses récidives sur une série de 77 cas de hernie ventrale. Dans chacun de ces cas, l'endroit où existait la hernie était resté intact, mais une nouvelle hernie s'était formée aux dépends de la faiblesse du fascia sur le bord de l'implantation du "mesh". On aurait pu éviter cela en mettant un nouveau "mesh" dont la surface aurait couvert toute la région affaiblie.

Dans la série de 96 cas de hernies inguinales avec tissus affaiblis et grandes pertes de substances (ordinairement récidivantes) il n'y eut que deux récidives. Les deux prirent place dans les premiers essais où on n'avait mis qu'une bande étroite de tantalum pour renforcer la première série de suture. Il est devenu évident maintenant que toute la surface du triangle de Hesselbach doit être recouverte et renforcie.

ZUSAMMENFASSUNG

Innerhalb von fuenfeinhalb Jahren wurden 173 Kranke mit schwierigen Bauch-und Leistenbruechen operiert, ohne dass unguenstige Resultate auftraten; in keinem Fall war die Entfernung des Tantalumnetzes notwendig.

Unter den 77 Bauchbruechen kam es fuenfmal zu einem sogenannten unechten Rueckfall. In jedem dieser fuenf Faelle blieb der Sitz des urspruenglichen Bruches in Ordnung, waehrend sich in der schwachen Faszie am Rande des eingepflanzten Tantalumnetzes ein neuer Bruch entwikkelte. Das haette sich vermeiden lassen, wenn das urspruenglich angewandte Stueck Tantalum gross genug gewesen waere, um die gesamte erschlaffte Gegend einzuschliessen.

Unter den 96 Leistenbruechen mit schwachem Gewebe und weiten Bruchpforten, meist rueckfaelligen Kranken, kam es in zwei Faellen zum Wiederauftreten des Bruches. Beide Male handelte es sich um Faelle aus der Anfangszeit der Serie, wo nur schmale Streifen von Tantalumnetz zur Verstaerkung der ersten Naht zur Anwendung gelangten. Es hat sich inzwischen herausgestellt, dass die gesamte Gegend des Hesselbachschen Dreiecks verstaerkt werden muss.

RESUMEN

173 pacientes con hernias ventrales e inguinales difíciles han sido operados durante un período de 5½ años. No hubieron resultados desagradables y en ningún caso hubo necesidad de remover la malla de tántalo.

Hubieron 5 casos de las llamadas falsas recidivas en la serie de 77 hernias ventrales. En cada uno de estos casos permaneció intacto el sitio de la hernia original, pero se desarrolló una nueva hernia en la débil aponeurosis al borde de la malla implantada. Esto hubiera podido evitarse si la malla usada hubiera sido lo suficientemente grande para cubrir toda el área debilitada.

En la serie de 96 casos de hernias inguinales con tejidos flojos y defectos grandes, por lo común recidivantes, sólo hubo 2 recidivas. Ambas tuvieron lugar en casos incipientes, en los que los que solamente se había usado una angosta tira de malla de tántalo para reforzar la primera línea de sutura. Esto señala que el área completa del triángulo de Hesselbach debe reforzarse.

RIASSUNTO

In cinque anni e mezzo furono operati 173 casi di ernie inguinali e ventrali difficoltose. Non vi furono risultati cattivi e in nessun caso si dovette togliere la protesi.

Fra le 77 ernie ventrali vi furono 5 casi di cosidette false recidive; in esse la sede dell'ernia primitiva era intatta, mentre si era prodotta una nuova ernia nella fascia profonda ai limiti della protesi. La recidiva avrebbe potuto essere evitata se la protesi fosse stata larga abbastanza da coprire l'intera zona debole.

Vi furono 2 recidive fra le 96 ernie inguinali, con tessuti scadenti e ampi orifici, molte delle quali già recidive. Entrambe si verificarono all'inizio, quando si usavano soltanto degli stretti nastri di tantalio per rinforzare il primo piano di sutura. Fu chiaro in seguito che si doveva rinforzare tutto il triangolo di Hesselbach.

SUMÁRIO

Cento e setenta e tres pacientes com dificeis hernias ventrais e inguinais foram operados noamente em um período de cinco emeio anos novamente.

Não houve resultados desfavoraveis e em nenhum caso houve necessidade de remover a mécha. Houve 5 casos das chamadas falsas recurrencias na serie de 77 hernias ventrais. Em cada um desses casos o sitio da hernia original permaneceu intacto, embôra uma nova hernia tenha se desenvolvido no fascia enfraquecido na margem da mécha implantada. Isso poderia ser evitado caso a peça de mecha usada em primeiro lugar fôsse suficientemente larga para cobrir toda a area enfraquecida.

Na serie de 96 casos de hernias inquinais com tecido fraco e grandes defeitos, as mais das vezes recurrentes, houve 2 recidivas. Ambas se apresentaram em casos precóces nos quais somente uma estreita faixa de tantalo foi usada para reforçar a primeira linha de sutúra. Torna-se evidente agóra que a inteira area do triangulo de Hesselbach deveria ter sido reforçada.

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Announcement

International Board of Occupational Surgery

The Executive Council of the United States Chapter and the Board of Trustees of the International College of Surgeons have unanimously approved the formation of an International Board of Occupational Surgery, the aims of which are (*a*) elevation of standards for the practice of occupational surgery, (*b*) conservation of the health of the worker after occupational injury, (*c*) official recognition of this specialty, (*d*) stimulation of interest in this field by students and members of the profession, and (*e*) cooperation in the establishment of facilities for graduate education in occupational surgery by means of residencies in hospitals affiliated with medical schools, or their equivalents

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Bleeding Peptic Ulcer

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THE many problems that arise in the treatment of peptic ulcer are familiar to every physician. It is generally agreed that its treatment is principally medical and that surgical intervention is reserved for its complications. The four principal complications of peptic ulcer are perforation, obstruction, intractability (in spite of a well-ordered medical regimen) and hemorrhage. It is the hemorrhaging peptic ulcer with which we are concerned in this paper.

To say that a bleeding peptic ulcer is a medical or a surgical disease is erroneous. It is a condition that demands the closest cooperation of the physician, the roentgenologist and the surgeon working as a team. Bleeding demands control of hemorrhage. If this cannot be accomplished by medical means, surgical measures are indicated. The problem at hand is to determine, if possible, which ulcer hemorrhage is likely to cause death if unchecked by surgical means.[1] Glenn and Harrison stated that if transfusion at the rate of 1,000 cc. per twenty-four hours fails to maintain the patient's blood volume and an ulcer is known to exist, operation should be undertaken at once. As further proof of the necessity of early rather than late operation,[2] Heuer reported from the New York Hospital that of 21 patients undergoing early operation because of bleeding peptic ulcer, only 2 died—a mortality rate of 10 per cent. Of 10 who were operated on late, 7 died—a mortality rate of 70 per cent.

Each case presents an individual problem. It is often difficult to decide as to the advisability of surgical intervention, as well as on the optimum time to operate. Few other situations afford a greater challenge to the physician's skill than does the management of the patient with a bleeding peptic ulcer. Constant observation, with frequent revaluation of the patient's condition, is required. Too much emphasis cannot be placed upon the individualization of treatment, as the particular problems of bleeding peptic ulcer render statistics unreliable as a guide.

It is well known that massive bleeding from the upper part of the gastrointestinal tract may come from sources other than a peptic ulcer. It is often difficult to differentiate the condition from bleeding esophageal varices, carcinoma, gastritis, hiatal hernia, leiomyoma of the small bowel, or Meckel's diverticulum. Thus, if rational treatment is to be carried out, it is of paramount importance to establish an early and definite diagnosis.

Lewison[3] reported that 9 per cent of the ulcer patients seeking admission to Johns Hopkins Hospital did so because of gross hemorrhage. Heuer[2] stated that 21 per cent admissions to the New York Hospital for treatment of ulcer were chiefly due to hemorrhage.

Marshall and Wilkinson[4] stated that massive hemorrhage is the second most common complication of peptic ulcer, the most common being obstruction.

In many cases massive hemorrhage is the first sign; there may be no antecedent history of ulcer distress. Wayburn[5] emphasized the fact that bleeding is often the initial major sign in the elderly patient. A previous history of ulcer symptoms helps to simplfy the diagnosis. Gray[6] stated that in approximately 75 per cent of all cases in which there is massive hemorrhage into the upper part of the alimentary tract the cause is peptic ulcer. He added, however, that studies performed in one-fourth of the cases of massive hemorrhage within three weeks of

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the onset of the hemorrhage failed to establish the cause and site of the bleeding.

In the attempt to establish a diagnosis, a painstaking history and physical examination are of extreme importance. A complete blood count, including a hematocrit reading, should be taken in every case. In some, especially those in which hemorrhage is the first sign, roentgen examination of the upper part of the intestinal tract will be required. There is some disagreement as to whether this procedure is justified in the presence of hemorrhage. In our opinion no harm is done by introducing barium, provided the test is done with extreme gentleness and without palpation.

Glenn and Harrison[1] stated that if the diagnosis has not been established and an ulcer cannot be detected by roentgenogram the operation should be postponed.

Warthin, Warren, and Wissing[7] stated that gastroscopic examination was helpful in establishing a diagnosis by determining the source of bleeding in 2 of their cases and suggested that the procedure be utilized more frequently.

We wish to emphasize the importance of evaluating and utilizing all information and procedures available, instead of depending upon one or two to establish the diagnosis. A much higher percentage of correct diagnoses will result. In our study we utilized every case of bleeding peptic ulcer admitted to St. Joseph's Hospital in the past nine years, as well as all those admitted to St. Catherine's Hospital in the past ten years.

The latter hospital has a bed capacity of 165. During the ten-year period (1940-1949), total admissions for all cases numbered 59,808. Of these, 129 (0.2 per cent) were admissions for the treatment of peptic ulcer. Of the 129 patients, 39 (30 per cent) had a history of bleeding; from 90 (70 per cent) no history of bleeding was obtained. Of the 39 who gave a history of bleeding, surgical intervention was deemed necessary for 4. The remaining 35 were treated medically, without mortality. Of the 90 without a history of bleeding, 37 required surgical intervention, and there was 1 postoperative death; 53 were treated medically, without mortality.

Thus, of 129 cases of peptic ulcer, surgical intervention was decided upon in 41, or 31 per cent. This figure is considerably higher than that given by most writers. Statistics on large series show that in approximately 15 to 20 per cent of cases peptic ulcer will require surgical intervention.

In a study of all cases of bleeding petic ulcer admitted for treatment during the previous ten-year period at St. Catherine's Hospital and the nine-year period at St. Joseph's Hospital, the following statistics were obtained: The combined capacity of the two hospitals is 615 beds. The patients admitted during this period numbered 165,710. Of this number, 206 were admitted with the diagnosis of bleeding peptic ulcer; 33 (16 per cent) were treated surgically, and 173 were treated medically. In the group treated surgically there were 4 deaths (13 per cent). In the medically treated groups, 7 patients died, a mortality rate of 4 per cent.

All 7 of the patients who died despite medical treatment died of exsanguination in spite of repeated transfusions. All were over 40 years of age. Three had had more than one episode of bleeding.

Of the 33 patients with bleeding peptic ulcer treated surgically, 18 had a history of bleeding on admission; 8 mentioned one previous bleeding episode. Three had had two previous hemmorrhages, and 4 had had three or more previous episodes of bleeding. Thus, 45 per cent had had one or more previous episodes of bleeding.

In the 33 cases treated surgically, 6 of the lesions were gastric ulcers and 27 were duodenal ulcers. Gastric resection was done in 22 instances, a gastroenterostomy in 7 and vagotomy in 2. In 1 a vagotomy and a posterior gastroenterostomy were done, and in 1 a bleeding gastric ulcer perforated and was closed. The 4 postoperative deaths all occurred in cases of bleeding duodenal ulcer following gastric resection In 2 instances death resulted from a rupture of the duodenal stump, proved at autopsy, and in 2 the cause of death was not determined.

In analyzing the statistics presented, as well as those resulting from other series in the study of the bleeding peptic ulcer problem, one would be likely to conclude that the patient has a much better chance of survival under medical treatment. In contrast,[8] Sengstaken and Blakemore stated that at the Presbyterian Hospital of New York City, in cases of peptic ulcer with persistent bleeding, operation has already proved its worth by reducing the mortality rate from 60 per cent to 5 per cent. Stewart and his associates[9] expressed the opinion that early gastric resection offers the best results in the treatment of acute massive hemorrhage from peptic ulcer. In 65 cases their operative mortality rate was 10.7 per cent, while in 42 cases in the nonoperative group, this rate was 21.4 per cent.

In many instances surgical intervention has been used as a last resort to stop bleeding from a peptic ulcer that more conservative measures have failed to control. It is to be expected that the mortality will be high under these circumstances. Therefore, in all fairness, one cannot compare the mortality rate of operative and nonoperative treatment. It would be better to interpret statistics on the basis of the number of lives salvaged rather than on that of the operative mortality.

There is some disagreement as to the mortality rate for massive hemorrhage from peptic ulcer. The overall rate cited has ranged from 4.8 to 20 per cent. Marshall and Wilkinson[4] stated that their experience, 80 per cent of patients who have had two or more hemorrhages will bleed again in spite of medical management. The outlook for the patient with a bleeding peptic ulcer, on the basis of these figures, is poor indeed. Fortunately, however, all patients do not fall into this category. It is because of these confusing statistics that we wish to emphasize the value of establishing, if possible, an early diagnosis, and to urge the individualization of treatment.

In deciding on the best course of treatment, many factors must be considered and carefully evaluated. Among the most important is the status of the circulatory system, judged by the degree of shock and blood loss as evidenced by blood pressure, pulse and respiration, as well as by careful hematologic studies. If there has been a large loss of blood volume, the immediate response to transfusion will give valuable information. The age of the patient is an important factor, but the amount of arteriosclerosis present is still more significant. Pavlovsky and Joly[10] called attention to the almost constant presence of severe lesions of the vascular wall in the bleeding vessels, ranging from hyperplasia to typical severe obliterating arteriosclerosis and making spontaneous hemostasis difficult. Although the time element is an important factor, careful examination of the cardiac, respiratory and renal systems should be carried out.

The duration of peptic ulcer symptoms, the response to medical treatment, and the presence or absence of previous complications may be ascertained from the patient's history. Especially important are the data on previous hemorrahgic episodes.

After a critical analysis has been made of the patient's condition, the question of surgical intervention must be decided. In some cases the answer is obvious, while in others it is an extremely difficult to arrive at. Most writers agree that the optimum time for intervention is within the first twenty-four to forty-eight hours; after this interval the mortality potential rises rapidly.

In our opinion, surgical intervention should be carefully considered for the following types of patient:

1. Any patient who does not respond to repeated blood transfusions in twenty-four hours, failure to respond being evidenced by repeated bouts of syncope and inability to maintain the blood pressure.
2. Any patient with a bleeding peptic ulcer further complicated by obstruction, perforation or intractability to a well-ordered medical regimen.

3. Any patient over 45 years of age with a massive hemorrhage or definite signs of arteriosclerosis.
4. Any patient with a massive hemorrhage who has had one or more previous hemorrhagic episodes.
5. Any patient having a recurrence of severe hemorrhage several days after recovery from a massive hemorrhage.

The operation of choice in the treatment of bleeding peptic ulcer is partial gastric resection, including the ulcer. In some cases it may be advisable to exclude the ulcer when it is deeply placed. When extreme difficulty is encountered in removing the ulcer, the surgeon is justified in excluding it, as a better closure of the duodenal stump may be done and the danger of damage to the common duct is avoided. Although recurrence of bleeding from excluded ulcers has been reported, we are convinced that this complication is offset by the danger of a ruptured duodenal stump or damage to the common duct which may result from an attempt to remove a deeply situated duodenal ulcer.

The surgical treatment of massive hemorrhage from a peptic ulcer requires closest cooperation between the internist, the roentgenologist and the surgeon; it requires adequate laboratory and blood bank facilities, good anesthesia, and constant nursing care. Surgical experience and skill are of paramount importance. If these facilities are not available, the patient will probably fare better under medical management.

SUMMARY

Bleeding peptic ulcer is discussed in some detail. The authors point out that the surgical treatment of this condition, as opposed to the medical, is confined chiefly to complication—perforation, obstruction, resistance to conservative measures, and hemorrhage. The literature is briefly reviewed, and a comprehensive analysis of treatment and results is presented.

SOMMAIRE

On discute en détail de l'ulcère peptique hémorragique. Les auteurs expliquent que le traitement chirurgical de cette condition est limité, contrairement au traitement médical, aux complications: perforation, obstruction, résistance aux mesures conservatrices et l'hémorragie importante. On y fait une bréve revue de la littérature sur le sujet avec une analyse du traitement et des résultats obtenus.

ZUSAMMENFASSUNG

Gewisse das blutende Magengeschwuer betreffende Einzelheiten werden eroertert. Die Verfasser betonen, dass die chirurgische Therapie der Erkrankung im Gegensatz zu medizinischen Massnahmen sich im wesentlichen auf die Behandlung von Komplikationen beschraenkt, naemlich Durchbruch, Obstruktion, Versagen konservativer Massnahmen und schwere Blutung. Es wird ein kurzer Ueberblick ueber die Literatur gegeben und eine zusammenfassende Analyse der Behandlung und ihrer Resultate vorgelegt.

RESUMEN

Se discute con cierto detalle sobre la úlcera péptica sangrante. Se puntualiza que el tratamiento quirúrgico de la misma, tan opuesto al médico, se limita principalmente a las complicaciones: perforación, obstrucción, resistencia a medidas conservadoras y hemorragia. Se revisa brevemente la literatura y se presenta un análisis comprensivo del tratamiento y resultados.

RIASSUNTO

Viene discusso qualche aspetto dell'ulcera sanguinante. Gli Autori sottolineano come la cura chirurgica dell'ulcera, a differenza di quella medica è diretta principalmente alle sue complicazioni; la perforazione, la stenosi, la resistenza ai medicamenti, l'emorragia. Segue una

breve rassegna della letteratura e una rivista dei metodi di cura e dei risultati.

SUMÁRIO

A ulcera peptica sangrante é discutida em alguns detalhes. Os autóres estabelecem que o tratamento cirurgico dessa condição, contrariamente ao tratamento clinico, é confinado principalmente ás complicações—perfuração, obstrução, resistencia á medidas conservativas e hemorragia. E' revista rapidamente a literatura e uma analise compreensiva do tratamento ex dos resultados é apresentada.

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Splint for Treatment of Buttonhole Rupture of Extensor Tendon at Middle Finger Joint

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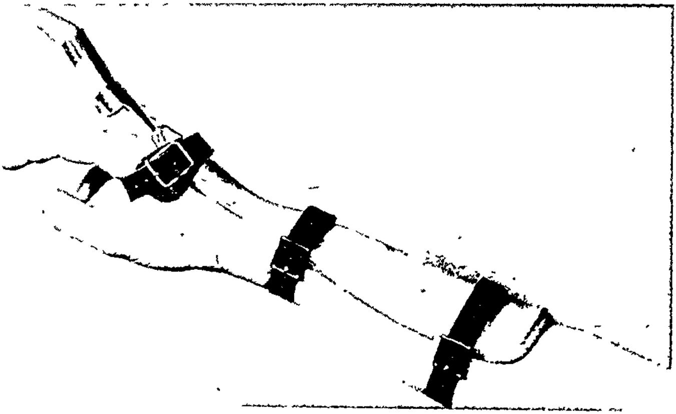
AFTER rupture of the central slip of the extensor tendon at the base of the middle phalanx, flexion occurs at the middle finger joint; the two lateral extensor slips separate to open the "buttonhole" through which the knuckle protrudes. The recommended early treatment is plaster splint fixation of the wrist and the proximal 2 finger joints in extension, the distal joint being left free.[1] Practical experience with this method shows that the cast usually becomes soiled, wet and cracked; adequate cleansing of the hand is not feasible. To eliminate these undesirable features, I have used for several years a special metal splint which I constructed with the technical assistance of Mr. Robert E. Lane and his associates. As the illustration indicates, the proximal two phalanges only are held in extension by incomplete and adjustable aluminum bands. The proximal end of the splint is covered with leather and fixed to the forearm by means of two leather straps, holding the wrist in the degree of extension desired. A stabilizing leather band with a buckle in the distal metacarpal area may be readily released to afford cleansing of the palm and dorsum of the hand; the patient is instructed not to unbuckle more than one strap at a time while cleansing the hand and forearm. The splint is usually individualized for each patient, since minor variations are necessary for the various fingers as well as for adjustment of the varying size of the patient's forearm and hand. The apparatus is simple



Author's splint as described in text. Wrist and proximal two finger joints are held in extension; apparatus permits flexion at distal finger joint.

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in construction, relatively inexpensive, light in weight and not bulky; the shirtsleeve on the affected side is easily buttoned over it.

The results of its use in treatment have been uniformly good in cooperative patients with typical injuries of one week's duration or less. Physiotherapy is given after the period of immobilization, since flexion of the affected joint is at first difficult. The splint has not been used, nor is it recommended, for severely traumatized joints with rupture of the collateral ligaments, for patients with infectious arthritis or for elderly persons in whom the joints tend to ankylose.

RÉSUMÉ

A la suite d'une rupture de l'insertion médiane du tendon extenseur sur la base de la phalangine, une flexion se fait à l'articulation moyenne du doigt; les deux insertions latérales de l'extenseur se séparent pour former une ganse à travers de laquelle un nodule fait protrusion. Le traitement précoce recommandé est la fixation avec une éclisse et diachylon du poignet et des 2 articulations proximales laissant libre l'articulation distale. L'expérience pratique nous montre qu'un plâtre ordinairement devient humide et craque; il est impossible de se nettoyer la main. Pour éviter ces conditions indésirables, j'ai employé depuis plusieurs années une éclisse de métal que j'ai fabriquée avec l'assistance technique de Mr. Robert E. Lane et s es associés. Comme l'indique l'illustration, les deux phalanges proximales seulement sont tenues en extension par des bandes d'aluminum incomplètes et ajustables. L'extrémité proximale de l'eclisse est couverte de cuir et fixée à l'avant bras au moyen de deux courroies maintenant lepoignet au degré d'extension désiré. Une bande de cuir stabilisatrice avec une attache à la région métacarpienne distale peut être détachée pour permettre le nettoyage de la main et de l'avant-bras; le patient est averti de ne pas détacher plus qu'une courroie à la fois pour se nettoyer. Il y a une éclisse individuelle pour chaque patient parce que la moindre variation est nécessaire pour chaque doigt et la grandeur variable de la main et de l'avant-bras des différents patients. C'est un appareil de construction simple et de prix modéré. Il est léger et non volumineux; on peut le couvrir avec la manche de chemise. Les résultats sont uniformément bons que les patients qui coopèrent et dont le traumatisme n'est vieux que d'une semaine ou moins. Après la période d'immobilisation on donne un traitement physiothérapique parce que la flexion de l'articulation malade est difficile au début. On n'a pas employé et ne recommande pas l'emploi de cette éclisse lorsque la traumatisme est très sévère ou comprend les ligaments collatéraux, lorsque il y a arthrite infectieuse ou chez le vieux patients qui ont des tendances à l'ankylose.

ZUSAMMENFASSUNG

Wenn der mittlere Zipfel der Strecksehne an der Basis der Mittelphalanx reisst, kommt es zur Beugung im mittleren Fingergelenk; die beiden seitlichen Zipfel der Sehne spreizen sich auseinander und oeffnen das "Kopfloch", durch welches das Knoechelchen hervortritt. Als fruehzeitige Behandlung wird die Ruhigstellung des Handgelenks und der beiden proximalen Fingergelenke in Extension mittels einer Gipsschiene empfohlen, wobei das distale Gelenk freigelassen wird. Die praktische Erfahrung mit dieser Methode zeigt, dass der Gipsverband gewoehnlich schmutzig, nass und bruechig wird, und dass die. Hand nicht richtig gesaeubert werden kann. Um diese unerwuenschten Schwierigkeiten aus der Welt zu schaffen, habe ich seit einigen Jahren eine Metallschiene verwendet, die ich selbst mit technischer Unterstuetzung des Herrn Robert E. Lane und seiner Mitarbeiter konstruiert habe. Wie die Abbildung zeigt, werden nur die beiden proximalen Phalangen mit Hilfe unterbrochener und verstellbarer Aluminiumbaender in Streckung gehalten. Das proximale Ende der Schiene ist mit Leder bezogen, wird mit

Hilfe von zwei Lederriemen am Unterarm befestigt und haelt das Handgelenk in dem gewuenschten Streckungswinkel. Ein verstaerkender Lederriemen mit einer Schnalle in der distalen Metakarpalgegend kann leicht geloest werden, um die Reinigung der Handflaeche und des Handrueckens zu ermoeglichen; der Kranke wird angewiesen, nicht mehr als einen Riemen auf einmal aufzuschnallen, wenn Hand und Unterarm gereinigt werden. Die Schiene wird gewoehnlich fuer jeden Kranken individuell angefertigt, *da je nach dem befallenen Finger* und nach der Groesse des Unterarms und der Hand des Kranken geringere Abaenderungen notwendig sind. Der Apparat ist einfach in der Konstruktion, verhaeltnismaessig billig, von geringem Gewicht und nicht plump; der Hemdsaermel des befallenen Gliedes kann leicht uebergeknoepft werden.

Bei verstaendigen Kranken mit typischen Verletzungen, die nicht aelter als eine Woche sind, sind die mit Anwendung der Schiene erzielten Resultate gleichmaessig gut. Nach der Periode der Ruhigstellung wird physikalische Therapie angewandt, da die Beugung des erkrankten Gelenkes im Anfang schwierig ist. Bei schwerverletzten Gelenken mit Zerreissung der Seitenbaender, bei Kranken mit infektioeser Gelenkentzuendung oder bei aelteren Leuten, die eine Neigung zur Gelenksversteifung haben, ist die Anwendung der Schiene nicht zu empfehlen.

RESUMEN

Como consecuencia de la ruptura de la lengueta central del tendón extensor en la base de la falange media (segunda falange), ocurre la flexión en la articulación digital media (primera interfalángica), separándose las dos lengüetas laterales del extensor para abrir el ojal a traés del cual es impelido el nudillo. El tratamiento temprano recomendado es la férula de yeso, con fijación de la muñeca y en extensión las dos articulaciones digitales proximales, dejando libre la articulación distal.[1] La experiencia con este método enseña que el aparato de yeso ordinariamente se ensucia, humedece y resquebraja, no siendo factible la limpieza adecuada de la mano. Con objeto de eliminar estos inconvenientes, el autor ha usado por varios años una férula metálica especial que ha contruido con la asistencia técnica del señor Robert E. Lane y asociados. Como indica la ilustración, las dos falanges proximales sólo se mantienen en extensión por tiras de aluminio incompletas y ajustables. La extremidad proximal de la férula está cubierta con cuero *y fijada al antebrazo con dos correas* de cuero, manteniendo la muñeca en el grado de extensión que se desee. Una tira de cuero con una hebilla en el área metacarpal distal puede aflojarse desde luego, para permitir la limpieza de la palma y el dorso de la mano; instruyéndose al paciente de que no debe aflojar más de una correa al mismo tiempo para la limpieza de la mano y el antebrazo. La férula es ordinariamente individualizada para cada paciente, dado que pequeñas variaciones son necesarias para los diversos dedos así como variantes en el tamaño de la mano y antebrazo del paciente. La construcción del aparato es sencilla, relativamente barata, ligera en peso y no voluminosa, pudiéndose abotonar prontamente sobre el mismo la manga de la camisa de la extremidad afectada.

Los resultados de su uso terapéutico han sido uniformemente buenos en pacientes comprensivos con lesiones tíicas de una semana o menos de duración. Se ha aplicado fisioterapia después del período de inmobilización, dado que la flexión de la articulación afectada es al principio difícil. La férula no ha sido usada ni se recomienda en casos de articulaciones gravemente traumatizadas con ruptura de los ligamentos colaterales, pacientes con artritis infecciosa o personas de edad en quienes las articulaciones tienden a la anquilosis.

RIASSUNTO

La rottura del fascio centrale del tendine estensore [illegible] b[illegible] della seconda

falange è seguita dalla flessione dell'articolazione media del dito; l'allontamento dei due fasci laterali determina la formazione di un'asola attraverso la quale protrude la nocca.

La cura precoce più raccomandata è la immobilizzazione con stecca gessata del polso e delle due articolazioni prossimali del dito in estensione, lasciando libera l'articolazione distale.

L'esperienza pratica, tuttavia, dimostra che di solito tale apparecchio si sporca, si inumidisce e si spezza, poichè non si può ottenere una sufficiente pulizia della mano.

Per eliminare questi inconvenienti io uso da diversi anni una speciale stecca metallica, costruita con l'assistenza tecnica di Mr. Robert E. Lane e collaboratori. Come si vede dalla figura, soltanto le due falangi prossimali vengono mantenute in estensione per mezzo di striscie di alluminio incomplete e regolabili. L'estremo prossimale dell'apparecchio è rivestito di cuoio e fissato all'avambraccio con due cinghie pure di cuoio, così da mantenere il polso nel grado di estensione desiderata. Una striscia di cuoio con fibbia, nella regione distale del metacarpo, può venire rapidamente slacciata per permettere la pulizia del palmo e del dorso della mano; il paziente sa che non deve slacciare più di una cinghia per volta quando vuol pulire l'avambraccio o la mano. L'apparecchio viene adattato ad ogni paziente, poichè sono necessarie variazioni minime per le varie dita e per le varie dimensioni dell'avambraccio e della mano.

L'apparecchio è di costruzione semplice, non costoso, leggero e non ingombrante; vi si può facilmente abbottonare sopra la manica della camicia.

I risultati ottenuti con esso sono sempre stati buoni, in pazienti con lesioni tipiche, datanti da una settimana o meno. Dopo l'immobilizzazione si pratica la fisioterapia, perchè la flessione dell'articolazione lesa è all'inizio difficile. L'apparecchio non è stato usato (nè può essere consigliato) nelle gravi fratture articolari con rottura dei legamenti, nei pazienti con artrite infettiva e neppure nei vecchi con tendenza all'anchilosi.

SUMÁRIO

Em consequencia de rotura do folhêto central do tendão extensôr na base da falange média ocórre flexão da articulação do dedo medio; os dios extensôres laterais separam-se para abrir a abotoadura através da qual a junta faz saliencia. O tratamento procóce recomendado e a fixação em tala gessada do punho e das duas articulações proximais dos dêdos em extensão, a articulação distal sendo deixada livre.[1] A experiencia pratica com este método demonstra que o gêsso usualmente se torna sujo, molhado e quebradico; a limpêza adequada da mão é inexequivel. Para evitar esses inconvenientes eu tenho usado por muitos anos uma tala de metal especial que construí com a assistencia tecnoca de Robert E. Lane e seus assistentes. Como a ilustração índica, as 2 falanges proximais são somente mantidas em extensão por faixas de aluminio incomplétas e ajustaveis. A extremidade proximal da tála é coberta com couro efixada ao antebraço por meio de duas correias, ficando o punho no gráu de extensão desejado. Uma tira de couro estabilizadôra com uma fivéla na area metacarpiana distal póde ser prontamente afrouxada, de módo a permitir a limpêza da palma e do dôrso da mão; o paciente é instruido para não desafivelar mais do que uma correia de cada vez emquanto limpa a mão e o ante-braço. A tala é usualmente individualizada para cada paciente, desde que as menores variações são necessarias para os varios dêdos, tanto quanto como para os respectivos antebraço e mão. O aparêlho é simples de construir, relativamente inexpensivo, leve em pêso e não volumôso; a manga da camisa da extremidade afetada é facilmente abotoada sobre ele.

Os resultados com seu uso tem sido uniformemente bons em pacientes cooperativos com lesões tipicas de uma semana de duração ou menos. Depois do periodo de imobilização medidas fisioterapicas são aplicadas, em razão de que a flexão da junta afetada é, á principio, difical. A tala não temsido usada, nem é recomendada

para articulacões gravemente traumatizadas com rotura dos ligamentos collaberais, em pacientes com artrite infeciosa ou em pessõas idosas nas quais a articulação tende a anquilosar

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Bilateral Successive Coexistent Tubal Pregnancies

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ON JAN. 19, 1938, Behney and Hanes operated on a woman who was in severe shock from intra-abdominal bleeding. They delivered first the left adnexa and found an unruptured tubal pregnancy in the left side. Since there was no bleeding on this side, they immediately investigated the right tube which proved to be ruptured and actively bleeding. Microscopic examination showed a freshly ruptured ectopic pregnancy in the right tube; the left tube contained clotted blood; areas of necrosis and fibrous tissues interspersed among fairly well preserved placental tissue and decidua, with infiltration of polymorphonuclear leukocytes. This, then, represents a proved case of a freshly ruptured tubal pregnancy in one tube and an old tubal pregnancy in the opposite tube, both of which were found during the same operation.

The case to be reported is similar in some respects, though different in many ways.

REPORT OF CASE

On May 6, 1946, a white woman 33 years of age, was seen in the office for the first time. She had given birth to 1 child on Oct. 16, 1944; she had had no miscarriages and no previous operations; she had suffered from premenstrual tension and headache, and she menstruated every thirty days over a period of four to six days.

At the time of her first visit she reported that her last menstrual period had started on March 3, 1946. She was nauseated. The uterus was enlarged to the size of a two months' pregnancy and was soft. On June 17 she reported slight bleeding that lasted five days, with no pain. During the first week of July she bled for seven days. In August there was normal bleeding of five days' duration. On August 16 pelvic examination revealed a uterus of normal size, shape and position, freely movable and without pain. The adnexa appeared normal in size and without pain on palpation. There was no abdominal pain or tenderness. In August and September she bled at normal intervals, for three days each time. There was bleeding in October, which was one week late but otherwise normal. The patient bled from December 8 until January 8, 1947. On January 9 she saw another physician who recommended curettement on account of a probable incomplete abortion. Before she was hospitalized, however, the bleeding had stopped, and nothing was done. The subsequent menstrual periods occurred from January 27 to 31; February 21 to 26, and March 21 to 23.

For the first time since August 1946, the patient visited my office on May 13, 1947, which was about two months after her most recent menstrual period. She stated that bleeding had started one week before and that she had been bleeding slightly since. There was pain in the right lower quadrant of the abdomen, radiating into the right thigh. The uterus was soft and somewhat enlarged. It was freely movable without pain in spite of the fact that the right adnexae, which were enlarged and very tender, were fixed in the cul de sac; pulsation in the right adnexal mass could be felt in the cul de sac. Hospitalization was advised but was delayed until the afternoon of May 16. On May 17 the first morning urine was obtained for a Friedman test, which on May 19 was reported as giving a positive result. On the patient's admission to the hospital abdominal and pelvic examinations showed no abdominal distention or rigidity; pain and tenderness over the right lower quadrant of the abdomen; moderate, very dark vaginal bleeding; cervix normal, hard; uterus enlarged, very painful to touch. too painful for any attempt to move it. On the right, in the cul de sac, there was a mass about 5 cm. in diameter, not movable and ex-

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tremely tender.

The blood count per cubic millimeter showed 4,090,000 erythrocytes, with 84.4 per cent hemoglobin, 8,200 leukocytes, with 76 polymorphonuclears and 24 lymphocytes.

Operation was performed on May 19. After a Pfannenstiel incision a small amount of tar-colored blood was noted in the abdomen. It was partly syrupy liquid and partly coagulated. The right tube was transformed into a hematocele, 7 cm. long and 3 cm. thick. Both ovaries were normal. The right tube was removed. On examination of the left adnexa it was noted that the left tube contained a hard, grayish spindle-shaped tumor at its ampullary end. The tumor was about 2.5 cm. long and a little less than 1 cm. wide. Proximal to this swelling the left tube appeared normal. Since the patient was very desirous of having another baby, the distal enlarged portion of the tube was amputated and a chromic No. 1 catgut thread was passed into the proximal part of the tube. The catgut thread was introduced easily down to the salpingo-uterine junction but could not be passed farther into the uterus. No attempt was made to do a formal salpingostomy. A routine appendectomy was done. The patient received penicillin prophylactically for four days. Her recovery was uneventful, and she was discharged on the sixth postoperative day.

Pathologic Report.—The specimen the appendix, one fallopian tube and half of the other. Both tubes were distended, injected and edematous, and both were the sites of a dull spongy, greyish red mass that was anchored to the mucosal surface. One mass measured approximately 25 mm. and the other approximately 55 mm. The walls of both tubes were thin, and there was no definite gross evidence of rupture. However, the larger mass extruded a spongy, friable tissue from the fimbrial end. In addition there was a moderate amount of partially organized blood clot. The smaller mass was darker than the larger, and there was a margin of yellowish gray organized blood clot separating the mass from the mucosa. The consistency was fairly firm. Only one straight incision was made through both specimens so as to preserve the gross appearance. The appendix measured 77 by 5 to 6 mm. and showed no significant gross change.

Microscopic examination of both tubes showed placental tissue. The sections from the smaller tube showed degenerated, nonviable, partially necrotic placental elements adherent to an edematous mucosa. There was marked interstitial edema through the tube, with focal areas of leukocytic infiltration. Examination of the larger tube showed viable placental elements with extensive organized blood clot. There was diffuse and intense leukocytic infiltration throughout the tubal wall, with interstitial edema and hyperemia. In addition, there were focal areas of interstitial hemorrhage.

Diagnosis.—The diagnosis was bilateral tubal pregnancy (Dr. Hart).

COMMENT

Simultaneous extrauterine and intrauterine pregnancy is the most frequent form of tubal pregnancy coexisting with a second pregnancy. Sloat and Peterson in 1938 reported 1 such case and listed 323 from the literature.

Less frequent and indeed rather uncommon are bilateral simultaneous tubal pregnancies. In one of the latest reports on this subject by Lee and Stone, these authors recorded 1 such case in addition to 78 previous cases.

The type of case reported here, a case of bilateral nonsimultaneous but coexistant tubal pregnancies, is either very rare or has rarely been reported, since only 1 detailed case of this nature could be found.

SUMMARY

The case is reported of a woman who had amenorrhea for three months, with nausea and enlargement of the uterus, and was thought to be pregnant. This was not the case, but after the episode she had menstrual irregularities. About one year later she had a right tubal pregnancy. At operation for this condition it was noted that, in addition to the pregnancy in her *right* tube, her *left* tube revealed an older ectopic pregnancy, occurring during the time when she was supposed to have been pregnant before. This older ectopic pregnancy had run a silent course.

Symptomless tubal pregnancies are not as rare as is supposed. There is no way to diagnose this condition unless one dis-

covers it accidentally at operation, as happened in this case and in 1 other case cited (see text).

RÉSUMÉ

On rapporte le cas d'une femme ayant une période d'aménhorrée de trois mois avec augmentation de volume de l'utérus et nausées; on la croyait enceinte. Mais ce n'était pas le cas, après cet épisode elle était menstruée irrégulièrement. Un an après elle eut une gorssesse tubaire typique. On l'opéra et on trouva qu'elle avait une grossesse tubaire dans sa trompe droite et que sa trompe gauche était le témoin d'une grossesse ancienne qui devait avoit eu lieu au moment où elle était censée être enceinte la première fois. Cette grossesse ectopique gauche ancienne était restée silencieuse.

CONCLUSIONS

Les grossesses tubaires asymptomatiques ne sont pas si rares qu'on le croit. Il n'y a pas moyen de faire un diagnostic dans les conditions à moins de faire une découverte opératoire accidentelle, comme il nous est arrivé dans ce cas. (Et dans un autre cas cité dans le texte original.)

RESUMEN

Se comunica el caso de una mujer amenorreica por 3 meses, con crecimiento uterino y náusea, de quien se pensó estaba embarazada. No se trató de esto pero después de este episodio tuvo irregularidades menstruales. Un año después aproximadamente tuvo un embarazo tubario derecho típico. Al ser operada se encontró por el mismo se encontró un embarazo tubario derecho y un embarazo ectópico muy anterior en la trompa izquierda, que debe haber ocurrído en la época en que se supuso estaba embarazada la paciente. Este embarazo izquierdo había evolucionado silenciosamente.

Conclusiones: Los embarazos tubarios asintomáticos no son tan raros como se supone. No existe medio para diagnosticarlos con excepción de su descubrimiento operatorio accidental, como sucedió en este caso y en otro más citado (ver texto).

ZUSAMMENFASSUNG

Es wird der Fall einer Frau berichtet, die drei Monate lang keine Menstruation hatte, eine Vergroesserung der Gebaermutter aufwies und unter Uebelkeit litt. Sie wurde fuer schwanger gehalten, was sich als unzutreffend herausstellte. Nach dieser Episode war die Menstruation der Kranken unregelmaessig. Etwa ein Jahr spaeter trat eine typische rechtsseitige Tubenschwangerschaft auf. Bei der deswegen vorgenommenen Operation, stellte sich eine rechtsseitige Tubenschwangerschaft heraus; gleichzeitig wies die linke Tube eine aeltere ektopische Schwangerschaft auf, die zur Zeit, als die Patientin zum ersten Male Schwangerschaftssymptome aufwies, eingesetzt haben muss. Diese aeltere ektopische Schwangerschaft hatte einen "stillen" Verlauf genommen.

SCHLUSSFOLGERUNGEN

Symptomlose Tubenschwangerschaften sind nicht so selten wie angenommen wird. Es gibt keine Moeglichkeit, die Erkrankung zu diagnostizieren, wenn man sie nicht gelegentlich einer Operation zufaellig entdeckt, wie es in dem hier berichteten und in einem weiteren zitierten Falle geschah [siehe Text].

SUMÁRIO

E' relatado o caso de uma mulher que tinha emenorréia ha tres meses, com aumento do utero e nausea e que era tida como gravida. Isso não era veridico, mas depois desse episodio ela teve irregularidades menstruais. Cêrca de um ano após ela teve uma pregnez tipica da trompa direita. Durante a operação foi verificado que ela tinha prenhêz tubar a *direita* e que sua trompa *esquerda* continha uma prenhez ectópica mais antiga, a qual deve ter occorrido durante o tempo em que ela

estava supostamente gravida Esta prenhez ectopica mais antiga havia tido um curso silenciôso

CONCLUSOES

Prenhêzes tubarias silenciosas não são taõ raras como se supôe Não ha meio de diagnosticar esta condição a menos que ela seja descoberta acidentalmente em operação, como aconteceu no presente caso e em outro tamben citado (vêr no têxto)

RIASSUNTO

Viene riferito il caso di una donna che aveva avuto per tre mesi amenorrea, nausea, ingrossamento dell'utero, cosi che pensava di essere gravida Ma non era cosi comparvero, in seguito, irregolarita mestruali, e -dopo un anno- una gravidanza tubarica destra

Operata, si trovo una gravidanza nella tuba destra, mentre la tuba sinistra ospitava una gravidanza piu antica, probabilmente quella stessa sospettata in passato e decorsa silenziosamente

CONCLUSIONI

La gravidanza tubarica senza sintomi non e cosi rara come si crede Non vi e modo di porre la diagnosi, a meno di scoprirla incidentalmente durante un intervento

Questo e quanto e accaduto nel caso riferito e in un altro caso citato

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Dr. Custis Lee Hall

1888—1951

As the Journal goes to press, we are apprised of the death of
Dr Custis Lee Hall, F A C S , F I C S
Vice President, International College of Surgeons
Past President, United States Chapter
Particulars will appear in the December issue of the Journal

The United States Chapter

of the

International College of Surgeons

in cooperation with

The Cook County Graduate School of Medicine

takes pleasure in announcing

Preassembly Postgraduate Courses

in

General Surgery, Gynecology and Obstetrics, Orthopedic Surgery, Urology, Proctology and Basic Sciences in Clinical Surgery

JULY 14 - 26, 1952

to be held at the

Cook County Graduate School of Medicine

For full details, address the Secretary, Preassembly Postgraduate Courses,
International College of Surgeons, 1516 Lake Shore Drive,
Chicago 10, Illinois.

* * *

For other postgraduate courses, see the following pages.

Editorial

The International College of Surgeons: A Teaching Institution

THE word "college" is defined primarily by Webster as a group of persons of similar interests, engaged in collaborative pursuits. The educational connotation apparently originated later, broadening and deepening the original concept. To the International College of Surgeons both definitions may be applied; the College is indeed a group—a world-wide association—of like-minded persons devoted to common interests and endeavors, but it is more than that. It is a teaching institution, and as such maintains the highest standards of instruction and evaluation.

There is no field of effort in which the need of further knowledge does not increase with the passage of time. Preeminently in science and specifically in surgery, this need is imperative and cannot be ignored. The International College of Surgeons has never ignored it. Effort and study are required to qualify for membership; continued effort and study are no less necessary for the maintenance of College standards. The biennial International Assembly, the annual Assembly of the United States Chapter and all of the various section meetings offer outstanding educational experiences and provide both members and guests with new points of departure and approach in thinking.

The College has recently added to its basic educational program a remarkably effective teaching device, the Film Forum, which will be an integral part of the Annual Assembly of the United States Chapter from now on. Film Forum speakers lecture on selected surgical topics, the instruction being simultaneously illustrated and made memorable by motion pictures of actual procedures. The Film Forum Premiére, which took place at the recent Assembly in Chicago, brought forth tremendous enthusiasm.

Now, as a further expansion of College educational facilities, a series of postgraduate courses will be offered. Two days of intensive instruction, given in collaboration with the Cook County Graduate School, will be available in July 1952 (see preceding page). The German chapter will present a four-week postgraduate course in several of the most important surgical fields (see p. 660 et seq.).

It will be observed that the instructors in these courses are men of distinction and authority in their several fields. We may look forward to sessions that are not only of practical value but intellectually stimulating and provocative of new ideas. Expansion and elaboration will naturally follow, for the College has already proved itself dynamic in the extreme. Its rapid growth alone attests to that.

Growth, however, is far from being the sole criterion of an organization's worth. The true strength of the International College of Surgeons arises from the spirit that pervades its membership, a combination of impartial scientific interest and profound concern with the humanitarian side of surgery. This is the spirit in which the College was founded; it is the spirit that has been maintained by a devoted membership wherever a chapter of the College exists; and it is the spirit which, God willing, will rise above all obstacles in the future as it has done in the past.

M. T.

Postgraduate Courses

Preassembly Courses Offered by the International College of Surgeons in Cooperation with the Cook County Graduate School of Medicine

The Seventeenth Annual Assembly of the United States and Canadian Chapters of the International College of Surgeons will be held in Chicago, September 2 to 5 inclusive, 1952. In keeping with the educational activities and objectives of the International College of Surgeons, arrangements have been made to offer, in cooperation with the Cook County Graduate School of Medicine, a two-week Preassembly Postgraduate Course from July 14 through July 26.

Since the course is designed primarily as an intensive review for members of the International College of Surgeons and those preparing for its examination, the number of registrations will be limited.

The course will consist of illustrated lectures, demonstrations, presentation of cases and surgical clinics. The teaching faculty will be comprised of members of the attending and associate staffs of Cook County Hospital and prominent guest lecturers from other cities.

In addition to general sessions for the entire group, there will be numerous section sessions for surgeons primarily interested in the following fields:

General Surgery
Orthopedic Surgery
Gynecology
Urology
Proctology
Basic Sciences in Clinical Surgery

Requests for application forms or additional information may be addressed to the Secretary, Preassembly Postgraduate Courses, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10, Illinois.

Courses Offered by the German Chapter, International College of Surgeons

The German Chapter of the International College of Surgeons is arranging a four-week postgraduate course, open to all surgeons except those in the Iron Curtain countries. The tentative date for the beginning of the course is January 14, 1952. The following subjects will be presented:

1. *Thoracic Surgery. Given by Prof. Dr. Albert Lezius,* Director of Surgical Department, University of Hamburg, and Assistants.
    a. Modern methods of anesthesia in chest surgery, with practical demonstrations
    b. Bronchoscopy
    c. Bronchography
    d. Intubation
    e. Postoperative care of the Bronchial Tree
    f. Operative treatments of Carcinoma of the Lungs
    g. Operative treatments of Bronchiectasis
    h. Operative treatment of Pulmonary Tuberculosis
    i. Operative treatments of tumors of the Mediastinum
    j. Surgery of the Esophagus and Cardia
    k. Operative treatment of congenital and acquired cardiac disease. (Fallot's Tetralogy, Ductus Botalli, Coarctation of the Aorta, Stenosis of the Aortic Valve, Angina Pectoris.)
2. *Surgery of the Stomach. Given by Prof. Dr. G. E. Konjetzny,* Director Emeritus, Department of Surgery, University of Hamburg.
    a. Pathologic anatomy and pathological physiology of gastric ulcer
    b. Operations on the stomach
    c. Evaluation of Dragsted's operation and sympathectomy
3. *Urologic Surgery. Given by Prof. Dr. Hans T. Junker,* Chief Urologic Clinic. Allgemeines Krankenhaus Barmbeck, Hamburg-Wandsbek.

a Cystoscopy
b Pyelography
c Roentgen diagnosis of diseases of the Kidneys
d Endoscopic operative procedures in tumors of the Bladder
e Tumors of the Prostate (particularly hypertrophy)
f Prostatectomy
  1 Freyer's method
  2 Millin's procedure
  3 Harris method
g Total cystectomy for carcinoma of the bladder
h Miscellaneous subjects

4 *Medullary Nailing of Fractures of Long Bones Given by Prof Dr Gerhard Küntscher*, Surgeon in Chief, Kreiskrankenhaus, Schleswig
a Theoretic Considerations of Medullary Nailing
b Indications for Medullary Nailing
c Bones of the Leg, Arm and Forearm
d Medullary Nailing in Operations for Pseudo Arthrosis
e Operative Technic
f Film Presentation

Place Postgraduate courses in Thoracic and Gastric Surgery will be held at the Surgical clinics of the University of Hamburg The course in Urologic Surgery will be held at the Allgemeines Krankenhaus Barmbeck, Hamburg Wandsbek

Tuition For those residing in Europe the tuition will be DM 100 per course For those residing in the United States Canada Central America and South America, the tuition will be $100 per course

Vierwochigen Fortbildungskurs
Deutsche Chapter, International College of Surgeons

Das Deutsche Chapter des International College of Surgeons beabsichtigt einen vierwöchigen Fortbildungskurs fur junge Arzte und Chirurgen zu halten Folgende Hauptthemen sind vorgesehen

1 Thoraxchirurgie Prof Dr Albert Lezius Direktor der Chirurgischen Universitats Klinik und Poliklinik Hamburg Eppendorf, und Mitarbeiter
a Moderne Narkose und Anesthesieverfahren fur die Thoraxchirurgie mit praktischen Uebungen
b Bronchoskopie
c Bronchographie
d Intubation
e Post-Operative Bronchialtoilette
f Die Operative Behandlung des Lungencarcinoms
g Der Bronchiektasen
h Der Lungentuberkulose
i Die Geschwülste des Mediastinums
j Die Chirurgie des Oesophagus und der Cardia
k Die Chirurgie der Angeborenen und der erworbenen Herzfehler (Fallot'sche Tetralogie, Ductus Botalli, Coarctation der Aorta, Pulmonalstenose, Mitralstenose, Aortenklappenstenose, Angina pectoris)

2 Chirurgie des Magens Prof Dr. G E Konjetzny, Direktor Emeritus der Chirurgischen Universitäts-Klinik und Poliklinik, Hamburg Eppendorf
a Pathologische Anatomie und Pathologische Physiologie des Magengeschwurs
b Die Operationen am Magen
c Stellungnahme zur Operation nach Dragstedt und zur Sympathektomie

3 Chirurgische Urologie Prof Dr. Hans T Junker, Chefarzt, der Chirurgische-Urologischen Klinik des Allgemeines Krankenhaus Barmbek
a Cystoskopie
b Pyelographie
c Röntgendiagnose der Nierenerkrankungen
d Operative endoskopische Eingriffe bei Blasentumoren
e Prostatahypertrophie
f Die Prostektomie nach Freyer, nach Millin und nach Harris
g Die totale Cystektomie beim Blasencarcinom
h Miscellany

4 Die Marknagelung von Frakturen Langer Rohrenknochen Prof Dr Gerhard Kuntscher, Chefarzt der Chirurgische Abteilung Kreiskrankenhaus Schleswig
a Theoretische Grundlagen der Marknagelung
b Indikationen die Oberschenkelmarknagelung
c Die Unterschenkelmarknagelung Oberarm und Unterarmmarknagelung
d Die Marknagelung bei Pseudarthrosenoperationen
e Operationstechnik
f Filmvorfuhrungen

Die Zeit Voraussichtlicher Beginn des Kurses

am Montag 14 Januar 1952

Ort des Kurses: Thoraxchirurgie und Magenchirurgie — Hamburg-Eppendorf, Chirurgische Universitäts-Klinik.

Urologie — Allgemeines Krankenhaus Barmbeck, Hamburg-Wandsbek.

Kosten: Kosten für Angehörige europäischer Staaten DM 100.

Kosten für Angehörige der U.S.A., der Mittel und Südamerikanischen und Canada Staaten 100 Dollar.

Die Kurse: Die Kurse bestehen in theoretischen Vorlesungen unde in täglichen Uebungen und Operationen.

Kursleiter: Prof. Dr. Albert Lezius: Prof. Dr. G. E. Konjetzny: Prof. Dr. Hans T. Junker: Prof. Dr. Gerhard Küntscher.

Anmeldungen bis 1 Januar 1952: Prof. Dr. A. Lezius, Direktor, Chirurgischen Universitäts-Klinik und Poliklinik, Hamburg-Eppendorf.

Cours Avancés Offerts par le Chapitre Allemand

du College International des Chirurgiens

Le Chapitre Allemand du Collège International des Chirurgiens organise un cours avancé de quatre semaines. Les sujets suivants seront traités:

1. Chirurgie Thoracique. Par Monsieur le Professeur Albert Lezius, Directeur de la section de Chirurgie a l'Université de Hamburg et ses Assistants.
    a. Méthodes modernes d'anesthésie en chirurgie thoracique, avec démonstrations pratiques
    b. Bronchoscipe
    c. Bronchographie
    d. Intubation tracheale
    e. Traitement post-opératoire en matière d'arbre bronchique
    f. Traitement chirurgicale des cancers du poumon
    g. Traitement chirurgicale des dilatations des bronches
    h. Traitement chirurgicale de la tuberculose pulmonaire
    i. Traitement chirurgicale des tumeurs du médiastin
    j. Chirurgie de l'ésophage et du cardia
    k. Traitement chirurgicale des cardiopathies congénitales et acquises (Tétralogie de Fallot. Persistance du Trou de Botal. Sténose de l'Isthme de l'Aorte. Retrécissement de l'Orifice Aortique, Angine de Poitrine)
2. Chirurgie Gastrique. Par Monsieur le Professeur G. E. Konjetzny, Directeur Emérite de la Section de Chirurgie à l'Université de Hamburg.
    a. Anatomo Pathologie et Physio Pathologie de l'ulcère de l'estomac
    b. Chirurgie gastrique
    c. Discussion de la valeur de l'Opération de Dragstedt et de la Sympathectomy
3. Urologie. Par Monsieur le Professeur Hans T. Junker, Chef de la Clinique d'Urologie à Allegemeines Krankenhaus, Barmbeck, Hamburg-Wandsbek.
    a. Cystoscopie
    b. Pyélographie
    c. Radiologie dans de diagnostic des maladies rénales
    d. La Chirurgie endoscopique des tumeurs de la vessie
    e. Les tumeurs de la prostate
    f. Prostatectomie
        1. Par la méthode de Freyer
        2. Par la méthode de Millin
        3. Par la méthode de Harris
    g. Cystectomie totale pour cancer de la vessie
    h. Sujets divers
4. L'Enclavage Medullaire des Fractures des os Longs. Par Monsieur le Professeur Gerhard Küntscher, Chirurgien Chef, Kreiskrankenhaus, Schleswig
    a. Considérations théoriques sur l'enclavage médullaire
    b. Les indications de l'enclavage médullaire
    c. Os de la jambe, du bras et de l'avant bras
    d. Le traitement des Pseudarthrosis par l'enclavage médullaire
    e. Téchnique opératoire
    f. Présentation de films.

Dâte: La dâte prévue pour le début du cours est le 14 janvier 1952.

Place: Les course avancés de Chirurgie Gastrique et Thoracique seront donnés à la Clinique Chirurcale de l'Université de Hamburg. Le cours d'Urologie sera donné à l'Allegemeines Krankenhaus, Barmbeck, Hamburg-Wandsbek.

Inscriptions: Pour ceux habitant l'Europe, l'inscription sera de 100 DM.

Pour ceux habitant les Stats-Unis. l'Amerique Centrale et du Sud et le Canada. l'Inscription sera de $100 par cours.

Les Cours: Les cours consisteront de demonstrations pratiques. de cours théoriques et de techniques opératoires donnés par les professeurs.

Les Directeurs Les Directeurs des cours nommes sont Messieurs Les Professeurs Albert Lezius, G E Konjetzny et Hans T Junker

Les demandes de renseignements et les inscriptions seront recues jusqu au le Janvier 1952, et devront être adressees a Monsieur le Professeur A Lezius, Directeur de la Section de Chirurgie, Universite de Hamburg Hamburg Eppendorf, Allemagne

Cursos de Post-Graduado Ofrecidos por el Capitulo Aleman del Colegio Internacional de Cirujanos

El Capitulo Aleman del Colegio Internacional de Cirujanos esta preparando un curso de Post Graduado de cuatro semanas de duracion La siguiente materia sera presentada

1 Cirugia de Torax Explicada por el Profesor Dr Albert Lezius, Director del Departamento de Cirugia, La Universidad de Hamburgo, y por sus asistentes
   a Metodos modernos de anestesia en cirugia de torax con demonstraciones practicas
   b Broncoscopia
   c Broncografia
   d Intubacion
   e Cuidado post operatorio del Arbol Bronquial
   f Tratamiento quirurgico del Carcinoma del Pulmon
   g Tratamiento quirurgico de la bronquiectasia
   h Tratamiento quirurgico de la Tuberculosis pulmonar
   i Tratamiento quirurgico de los tumores del mediastino
   j Cirugia del esofago y cardias
   k Tratamiento quirurgico de enfermedades cardiacas congenitas y adquiridas (Tetralogia de Fallot Coartacion de la Aorta Estenosis de la Valvula Aortica, Angina Pectoris)

2 Cirugia del Estomago Explicada por el Profesor Dr G E Konjetzny Director Emerito del Departamento de Cirugia de la Universidad de Hamburgo
   a Anatomia y fisiologia patologica de la ulcera gastrica
   b Operaciones del estomago
   c Evaluacion de la operacion de Dragstedt y la simpatectomia

3 Cirugia Urologica Explicada por el Prof Dr Hans T Junker, Jefe de la Clinica Urologica, Allgemeines Krankenhaus Barmbeck, Hamburg Wandsbek
   a Cistoscopia
   b Pielografia
   c Diagnostico Radiologico de las Enfermedades de los Rinones
   d Tecnicas operatorias endoscopicas en tumores de la vejiga
   e Tumores de la prostata (Particularmente la hipertrofia)
   f Prostatectomia
      1 Metodo de Freyer
      2 Metodo de Millin
      3 Metodo de Harris
   g Cistectomia total en Carcinoma de la vejiga
   h Temas Miscelaneos

4 Aplicacion Medular de Clavos en Fracturas de los Huesos Largos Explicada por el Profesor Dr Gerhard Kuntscher, Jefe en Cirugia Kreiskrankenhaus Schleswig
   a Consideraciones teoricas sobre aplicacion medular de clavos
   b Indicaciones
   c Huesos de la pierna, brazo y antebrazo
   d Aplicacion de clavos en pseudo arthrosis
   e Tecnicas operatorias
   f Presentacion de Peliculas

Fecha La fecha aproximada para el comienzo del curso es Enero 11, 1952

Lugar Los cursos de post graduado en cirugia de torax y estomago se llevaran a cabo en las clinicas quirurgicas de la Universidad de Hamburgo El curso en cirugia urologica se ofrecera en Allgemeines Krankenhaus Barmbeck, Hamburgo Wandsbek

Matricula Para aquellos que residen en Europa, el costo sera de DM 100 cada curso

Para aquellos que residen en Los Estados Unidos Canada, Centro y Sud America, el costo sera de $100 00 cada curso

Cursos Los cursos consistiran en demostraciones practicas diarias conferencias y procederes quirurgicos realizados por los profesores y asistidos por los post graduados

Directores Prof Dr Albert Lezius, Prof Dr G E Konjetzny, Prof Dr Hans T Junker, Prof Dr Gerhard Kuntscher

Solicitudes de Matricula Solicitudes de matricula para los cursos de post graduados seran aceptadas hasta Enero 1 1952 y deben ser dirigidas al Profesor Dr Albert Lezius, Jefe del Departamento Quirurgico de la Universidad de Hamburgo, Hamburgo Eppendorf, Alemania

Corsi per Laureati Offerti Dalla Sezione Tedesca

dell' International College of Surgeons

La Sezione Tedesca dell' "International College of Surgeons" sta preparando un corso per laureati della durata di un mese. Saranno presentati i seguenti argomenti:

1. Chirurgia Toácica: Prof. Dott. Albert Lezius, Direttore della Clinica Chirurgica dell'Università d'Amburgo, ed í suoi assistenti.
   a. Metodi moderni d'Anestesia in chirurgia torácica, con dimostrazioni pratiche
   b. Broncoscopia
   c. Broncografia
   d. Intubazione
   e. Cura postoperatoria dell'àlbero bronchiale
   f. Trattamento operatorio del cancro del polmone
   g. Trattamento operatorio delle bronchietasie
   h. Trattamento operatorio della tubercolosi polmonare
   i. Trattamento chirurgico di tumeri del mediastino
   j. Chirurgia dell'esofago e del cardia
   k. Trattamento operatorio delle cardiapatie congenite ed acquisite (Tetralogia di Fallot, Dotto di Botallo, Coartazione aortica, Stenosi della valvola aortica, Angina di Petto)
2. Chirurgia Dello Stomaco: Prof. Dott. G. E. Konjetzny, Direttore Emerito della Clinica Chirurgica dell'Università d'Amburgo
   a. Anatomia e fisiologia patalogica dell'úlcera gastrica
   b. Interventi sullo stomaco
   c. Valutazione dell'intervento di Dragstedt e simpaticectomia
3. Chirurgia Urologica: Prof. Dott. Hans T. Junker, Capo della Clinica Urologica, Allgemeines Krankenhaus, Barmbeck, Amburgo-Wabdsbej
   a. Cistoscopia
   b. Pielografia
   c. Diagnosi radiologica delle malattie del rene
   d. Procedure operatorie endoscopiche dei tumori della vescica
   e. Tumori della prostata (particolarmente ipertrofia)
   f. Prostatectomia
      1. Metodo di Freyer
      2. Metodo di Millin
      3. Metodo di Harris
   g. Cistectomia totale nel carcinoma della *vescica*
   h. Argomenti vari
4. Trattamento Delle Fratture Delle Ossa Lunghe Con il Metodo Delle'Inchiodamento *Intramidollare*
   a. Considerezioni teoriche
   b. Indicazioni
   c. Applicazioni all'arto superiore ed inferiore
   d. Applicazioni in casi di pseudoartrosi
   e. Tecnica operatorie
   f. Prezentazione di radiogrammi

La Data: La data probabile dell'inizio del corso e il 14 Gennaio 1952

La Situazione: I corsi di chirurgia torácica e gastrica saranno tenuti alla Clinica Chirurgica dell'Università d'Amburgo. Il corso in chirurgica urologica sarà tenuta nella Allgemeines Krankenhaus Barmbeck, Amburgo-Wandsbek.

Tassa: Per quelli che risiedono in Europa, la tassa sarà di 100 D.M.

Per quelli che risiedono negli Stati Uniti, America Centrale e Medionale e Canadà, la tassa sarà di $100.00 per corso.

I Corsi: I corsi consisteranno de dimostrazioni pratiche, lezioni e interventi operatori quotidiane attuate dagli insegnanti e dei laureati.

I Direttori: Prof. Dott. Albert Lezius, Prof. Dott. G. E. Konjetzny, Prof. Dott. Hans T. Junker, Prof. Dott. Gerhard Küntscher.

Informazione e domande frequenza per il corsi per laureati saranno ricevute sino al 1 Gennaio 1952 e devono essere indirizzate al Prof. Dott. Albert Lezius, Direttore della Clinica Chirurgica, Università d'Amburgo, Amburgo-Eppendorf, Germania.

Cursos de Post-Graduacao Oferecidos Pelo Capitulo Alemao

do Collegio Internacional de Cirurgioes

b. Broncoscopia

de Cirurgioes esta organizando um curso de post-graduacao de quatro semanas. Os seguintes assuntos serao apresentados:

1. Cirurgia do Thorax. Dado pelo Prof. Albert Lezius, director do Departamento Cirurgico, Universidade de Hamburgo e seus assistentes.
   a. Metodos modernos de anestesia em

cirurgia torax com demonstracoes praticas

- b Broncoscopia
- c Broncografia
- d Intubacao
- e Cuidados pos operatorios de arvore bronquial
- f Tratamentos operatorios do carcinoma dos pulmoes
- g Tratamentos operatorios da bronquiectasia
- h Tratamento operatorio da tuberculose pulmonar
- i Tratamento operatorio de tumores do mediastino
- j Cirurgia do esofago e do cardia
- k Tratamento operatorio de doencas cardiacas adquiridas ou congenitas (Tetralogia de Fallot Buraco de Botal, Coarctacao da Aorta estenose de valvula aortica, angina pectoris)

2 Cirurgia do Estomago Dado pelo Prof Dr G E Konjetzny, Diretor Emerito Departamento de Cirurgia Universidade de Hamburgo

- a Anatomia patologica e psiologia patologica da ulcera gastrica
- b Operacoes sobre o estomago
- c Julgamento do operacio de Dragstedt e simpatectomia

3 Cirurgia Urologica Dada pelo Prof Dr Hans T Junker, Chefe Clinica Urologica, Allgemeines Krankenhaus Barmbeck, Hamburg Wandsbek

- a Cistoscopia
- b Pilografia
- d Diagnostico radiologico das doencas dos rins
- e Processos operatorios endoscopicos em tumores da bexiga
- f Tumores da prostata (particularmente hipertrofia)
- g Prostatectomia
  - 1 Metodo de Freyer
  - 2 Metodo de Millin
  - 3 Metodo de Harris
- h Cistectomia total em carcinoma da bexiga
- i Assuntos diversos

4 Fixacao de Fraturas de Osos Longos por Cravejamento Metalico Medular Dado pelo Prof Dr Gerard Kuntscher, Chirurgiao en Chefe Kreiskrankenhaus, Schleswig

- a Consideracoes teoricas sobre cravejamento metalico medular
- b Indicacoes para cravejamento metalico medular
- c Osos de perna, braco y ante braco
- d Cravejamento medular em operacoes para pseudo artrosis
- e Tecnica operatoria
- f Film

A Data A data provavel para inicio do curso e 14 Janeiro de 1952

Sitio Cursos pos graduados em Cirurgia do Estomago e do Thorax serao dados na Clinica Cirurgica da Universidade de Hamburgo O curso de Cirurgia Urologica sera dado no Allgemeines Krankenhaus Barmbeck Hamburgo Wandsbek

Taxes Para os residentes nos Estados Unidos, Central e Sul America e Canada, a taxa sera de $100 00 por curso

Para os residentes na Europa, a taxa sera de DM 100 para cada curso

Os Cursos Os cursos consistirao de demonstracoes practicas, aulas e operacoes dadas por professores e post graduados

Diretores Prof Dr Albert Lezius Prof Dr G E Konjetzny Prof Dr Hans T Junker Prof Dr Gerhard Kuntscher

Informacoes e registro para os cursos de pos graduacao serao recebidas ate 1 de Janeiro de 1952 e devem ser dirigidas ao Prof Dr Albert Lezius Universidade de Hamburgo, Diretor do Departamento Cirurgico, Hamburgo Eppendorf, Alemanha

Dates of Madrid Assembly Meetings

University of Bordeaux	May 13, 14
University of Barcelona	May 16, 17 18
University of Madrid	May 20 23
University of Vienna	May 26, 27
Inauguration of Netherlands Chapter, Amsterdam	May 29, 30

Bad times have a scientific value These are occasions a good learner would not miss

—Emerson

The times are not as bad as they seem They couldn't be

—Jay Franklin

Chapter News

International College of Surgeons

United States and Canadian Chapters

Arnold S. Jackson, M.D., F.A.C.S., F.I.C.S., Secretary

Southern California Section: The Third Quarterly Meeting of the Southern California Section was held Wednesday, October 24, at the Hotel Mayfair in Los Angeles, with Dr. J. James Duffy, Chairman of the Section, presiding. The guest speaker was Dr. Fred L. Soper of Washington, D. C., whose topic was "The Stake of the United States in International Health." Dr Soper is Director of the Pan-American Sanitary Bureau and Regional Director of the World Health Organization. During World War II he was Consultant on Epidemic Diseases to the Secretary of War, U.S.A. (1942-1946).

Dr. Soper is a member of the American Association for the Advancement of Science; the American Academy of Tropical Medicine; the American Public Health Association; and the National Research Council, Committee on Insect and Rodent Control. He has been decorated by the Government of Cuba (1940), Brazil (1942) and the United States (1944—Typhus Commission Medal; 1946 the Lasker Award from American Public Health Association), Egypt (1947).

The attendance was large, including several South American guests presented by Dr. Elmer Belt: Dr. and Mrs. Ricardo Ercole of Rosario, Argentina, Dr. John Irazu of Buenos Aires, and Dr. Lupe Mendoza of La Pag, Bolivia.

Alabama Section: The Alabama section will be host to the Southern Assembly of International College of Surgeons (Alabama, Tennessee, Louisiana, Mississippi, Florida, Georgia, North Carolina, South Carolina) on Feb. 15 and 16, 1952, at the Tutwiler Hotel, Birmingham.

A full two days of surgical papers and panels by outstanding essacerts is assured. All physicians and their wives are cordially invited.

New York Surgical Section: The first annual scientific session of the New York State Surgical Section of the United States Chapter, International College of Surgeons, convened on November 1 at Hotel McAlpin, beginning at 2 p.m. and closing at 5.

The arrangements, under the direction of Dr. Henry M. Scheer, Chairman of the Surgical Section, included presentations of five scientific papers by invited guest speakers at the afternoon session. The speakers were Dr. Walter A. Coakley of Brooklyn, whose topic was "Care and Treatment of Burns in the Event of Disaster"; Dr. Rudolph Nissen of New York, who spoke on "Management of Difficult Situations in Surgery of Peptic Ulcer"; Dr. Philip Thorek of Chicago, who discussed "Intestinal Obstruction"; Lt. Col. Edwin J. Pulaski of Walter Reed Hospital, Washington, D. C., whose topic was "Antibiotics," and Dr. William Carpenter MacCarty, Sr. of Rochester, Minnesota, who presented "A Look at Some Facts About Gastric Cancer."

Rear Admiral H. Lamont Pugh, Surgeon General, U. S. N., delivered an address entitled "Military Medicine's Dividends," at the banquet, which was held at Hotel McAlpin at 7 p.m.

Among the guests of the local surgical group, of which Dr. Horace E. Ayers is Regent, were Dr. Max Thorek of Chicago; Prof. Dr. A. Mario Dogliotti of Turin, first President of the Italian Chapter of the College; Dr. John Stanley Kenney, President of the Medical Society of the State of New York; Dr. Moses Behrend of Philadelpia; Dr. M. Leopold Brodney of Massachusetts, and Dr. Earl J. Halligan of New Jersey.

Señor Julio Fernancez-Davila, Consul General of Peru, and Señor Francisco Moncaya, Secretary to the Consul General of Spain, attended the banquet.

Women's Auxiliary: The Women's Auxiliary of the United States Chapter, International College of Surgeons, invites the participation of all wives of members in good standing (see announcement elsewhere in this issue). Women's Auxiliary pins bearing the official insignia may be purchased by writing to Mr. Ralph Osborne, 1516 Lake Shore Drive, Chicago 10. The price is $19 for gold and $9 for gold-filled pins.

California Surgical Section: This section will meet on December 2 and 3 at the Ambassador Hotel in Los Angeles The program is as follows

Sunday, December 2

Morning

Finis G Cooper M D F A C S F I C S presiding

9 00 a m	Samuel Perzik M D F I C S—*Tumors of the Parotid Gland*
9 20 a m	O Dale Lloyd M D, F A C S, F I C S —*Hashimoto s Disease—Struma Lymphomatosa*
9 45 a m	Elmer Belt, M D, F A C S F I C S —*Vesicovaginal Fistula*
11 10 a m	F E Leffingwell, M D, F I C S —*Anesthesia for Cardiac Patients*
11 30 12 00	Round table discussion
12 00 noon	Luncheon, Ambassador Hotel

Afternoon

Rafe Chaffin M D, F A C S, F I C S presiding

2 00 p m	Malcolm Hill M D, F A C S F I C S —*Differential Diagnosis of Rectal Pain*
2 20 p m	Justin Stein, M D, F A C S F I C S —*Carcinoma of the Breast*
2 45 p m	Mr Ritz Heerman—*Administrative Practices Committee of American Hospital Association—Comparison of Hospital Care in Europe and United States*
3 15 p m	Walter Boyd M D F A C S F I C S—*Inguinal Hernia, Indirect and Direct*
3 45 p m	Round table discussion
6 00 p m	Cocktails, Ambassador Hotel

Monday December 3

Morning

Elmer Belt, M D, F A C S, F I C S, presiding

9 00 a m	Kurt Kent, M D—*Lesions of the Duodenum, Their Significance*
9 20 a m	Ralph B Cloward, M D, F A C S, F I C S (Honolulu)—*Changes of the Vertebrae Caused by Rupture of Intervertebral Discs*
9 45 a m	Donald C Collins, M D, F A C S, F I C S—*Endometriosis of the Appendix*
10 15 a m	Robert Mazet, Jr, M D, F A C S—*Intramedullary Nailing of Long Bones*
10 40 a m	Round table discussion
11 30 a m	Luncheon, Ambassador Hotel

Afternoon

Donald C Collins, M D, F A C S, F I C S, presiding

2 00 p m	Martin Nogore, M D, F A C S —*How Safe Is Gallbladder Surgery Collective Review of* 1,000 *Cases in Seattle, Washington*
2 20 p m	Conrad Baumgartner, M D, F A C S, F I C S — *Transthoracic Repair of Diaphragmatic Hernia (motion picture demonstration)*
2 45 p m	Paul Wug, M D F A C S—*Surgical Complications in Obstetrics and Gynecology*
6 00 p m	Cocktails, Ambassador Hotel
7 00 p m	Banquet—Attire optional Speaker Dr Max Thorek, Founder—*Why an International College of Surgeons?*

For hotel reservations, write to the Chairman on Arrangements, Dr Joseph de las Reyes, 1401 South Hope Street, Los Angeles

The Women's Auxiliary of the International College of Surgeons

invites the membership and participation of the wives of all members in good standing The purpose of this organization is to aid the work of the men in promoting international exchange of knowledge and ideas and to extend hospitality and friendship to the wives of surgeons from other countries For details address Women s Auxiliary International College of Surgeons 1516 Lake Shore Drive Chicago 10 Illinois

The annual dues of the Women s Auxiliary are $10 (subject to change) and are payable to Mrs Louis Plzak Treasurer Berwyn Illinois The first council meeting will be held soon Members will be informed by mail of the exact date

Forthcoming Regional Meetings of the International College of Surgeons

The Seventeenth Annual Assembly of the United States Chapter will be held at the Conrad Hilton Hotel (formerly the Stevens) in Chicago, Sept. 2 to 5 inclusive, 1952. Further information may be obtained by communicating with Dr. Arnold S. Jackson, Secretary, United States Chapter, 1516 Lake Shore Drive, Chicago 10, Illinois.

The Eighth Biennial International Assembly of the International College of Surgeons will be held in Madrid, Spain, May 20-23 inclusive, 1952. The plan for travel includes meetings with the French Chapter of the International College of Surgeons in Paris and Bordeaux,. to be followed by meetings in Barcelona, Madrid, Vienna and Amsterdam. Information may be obtained by addressing the Secretariat, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10, Illinois..

Regional Meetings

United States Chapter, International College of Surgeons

Location	Date	Chairman
Los Angeles, California Ambassador Hotel	December 3-4, *1951*	Dr. Joseph de los Reyes 1401 South Hope Street
Birmingham, Alabama Tutwiler Hotel	February 15-16, 1952	Dr. Paul W. Shannon Woodward Building
Pittsburgh, Pennsylvania William Penn Hotel	March 14-15, 1952	Dr. Elmer S. A. King 3700 Fifth Avenue
Tulsa, Oklahoma Mayo Hotel	March 28, 1952	Dr. André B. Carney 915 S. Cincinnati
Detroit, Michigan Statler Hotel	April 24-25, 1952	Dr. Warren W. Babcock *806 Fisher Building*
Kansas City, Missouri President Hotel	April 27-28-29, 1952	Dr. Claude Hunt 1612 Professional Bldg.
Colorado Springs, Colorado Broadmoor Hotel	May 2-3, 1952	Dr. Kenneth Sawyer 1820 Gilpin Street, Denver

For information, please communicate with the respective chairmen as listed above.

General News Notes

Drive Against Tuberculosis in the Philippines: A campaign to wipe out tuberculosis will be launched this year in the Philippines with the $350,000 which the ECA will allocate each year for five years for this purpose

ECA aid will come in the form of equipment, supplies and materials, will be added to existing chest clinics mobile roentgen units and technicians to launch ten anti-TB units

Organization of ten such units each year will mean the servicing of ten provinces until a total of 50 units and 50 provinces are being serviced Provinces with the highest incidence and highest TB mortality rates will be given priorities in the current campaign

At present there are seven chest clinics operating, plus three mobile roentgen units Teams in the field have already laid the groundwork for the initial moves in the new campaign

International Dental Congress: London has been selected for the eleventh International Dental Congress, which will be held July 19 to 26, 1952 The secretary of the Congress, to whom all communications should be addressed, may be reached at 13 Hill Street, London

World Population: According to a Reuter report released by the World Health Organization, giving a summary of population changes in the world in the last fifty years there are now 2,377,400,000 living men, women and children Southern Ireland showed a decrease in population of 200,000 India and Pakistan have risen from 282,500,000 to 420,400,000 Russia has 200 million and the United States 149 million Great Britain has increased its population by 13 million, Italy by 46 million, Sweden by 7 million, Norway by 3,200,000 and Denmark by 4,200,000 The largest percentage increase was in Argentina, where the population rose from 4,800,000 to 16,800,000, showing a 251 per cent increase

First International Congress of Neuropathology This congress is scheduled for the first week of September 1952 Rome has been chosen for the convention city Among the topics to be discussed are histopathology of the demyelinating diseases, histopathology of vascular diseases, histopathology of schizophrenia, histopathology of mental deficiencies, and histopathology of senility Dr Mario Gozzano of Rome will preside over the congress Those wishing to be included in the program should communicate with him

Public Health Service Reports on Carcinoma: The possibility of discovering cancer of the uterine cervix and starting treatment five to seven years before the typical symptoms appear has been demonstrated in clinical studies made by the Public Health Service

In examining a group of more than 3,000 women at a clinic formerly operated by the Cancer Control Branch of the National Cancer Institute at Hot Springs, Arkansas, two physicians assembled data suggesting that "the majority of cervical malignancies existing in a group of female patients are present in an asymptomatic, localized form for a minimum of 5 to 7 years before the typical symptoms and clinical appearance of cancer become apparent "

The studies were made by Dr Rodney B Nelson, formerly Senior Assistant Surgeon (R), and Dr Albert W Hilberg, Surgeon (R) of the Public Health Service

In their examinations the two doctors employed the cytologic (smear) test and the biopsy Results of both these tests are disclosed in laboratory examination of the material to determine whether cancer cells are present The cytologic test is made first and usually indicates whether a biopsy should be made "Under the conditions of this study," Drs Nelson and Hilberg reported, "the combined accuracy of the two techniques in diagnosing carcinoma of the cervix approaches 100 per cent "

The average age of the 3,224 women examined was 45 6 years It was found that there was an interval of three years between the mean age of patients with cancer of the cervix which had not invaded the uterus proper and those with early infiltrative cases of carcinomas, and approximately seven years between women with preinvasive and women with advanced tumors

'This points up the importance of the presymptomatic, incipient stage of cervical cancer and the possibility of diagnosing it over a period of several years before it becomes clinically apparent," the investigators said The data assembled, they added, indicate that "there is a considerable reservoir of unknown cervical cancer in a population which can be demonstrated by the means used here

New Books

Your Blood Pressure and You. By George Halperin. Chicago: Brownlee and Shaw, Publishers, 1951. Pp. 94, with 6 illustrations.

In this brief account, directed to the layman, Dr. Halperin has written in the simplest possible terms of the nature and problems of hypertension. Such a work has long been needed, for the average layman with high blood pressure tends to become unduly alarmed about the situation, even in some instances to the point of neurosis.

Dr. Halperin makes no attempt to deprecate or ignore the serious potentialities of this condition; on the contrary, he states almost at the outset that hypertension is a chronic disease and that the patient must be prepared to cope with it for the rest of his life. Since a realistic facing of the facts is the best of all possible bases for maintaining emotional balance, the reader, once he has accepted them, is ready for a down-to-earth discussion of what can be done about it.

This is exactly what Dr. Halperin gives him. Writing in the easy, informal tone of a personal letter or an intimate group discussion, he begins by offering a painstaking and admirably simplified explanation of the anatomic background of hypertension, from which the patient may easily gain a clear idea of the cardiac and vascular structures. This is combined with an explanation of physiologic function. The following quotations will give an idea of the remarkable simplicity and clarity of the writing: "There is an opening between the right auricle and the right ventricle large enough to admit the tips of your four fingers.". . . "You will now conceive of the arterial tree as a complete network which covers all of the structures of the body and feeds them with arterial blood."

A discussion of the pros and cons concerning "normal" blood pressure follows, in which Dr. Halperin points out that opinion has varied greatly from time to time and that blood pressure levels formerly considered high may be compatible with a fair level of health and the continuance of work. He emphasizes the importance of weight control, diet low in salt and the avoidance of violent exercise.

Great stress is laid upon the psychic factor. Fear, anxiety, anger and worry are emphasized as emotions to be avoided. A hopeful and constructive attitude toward the disease itself should be built up on a foundation of knowledge of the facts and an intelligent and continuous effort to live wisely.

Certain therapeutic aspects are briefly discussed, including sympathectomy for malignant hypertension, But Dr. Halperin's chief emphasis, which is in agreement with the preponderant medical opinion of today, is placed upon diet and psychic adjustment. Throughout this short treatise the general tone is highly encouraging, despite the fact that no pertinent point has been omitted because of its unpleasantness. The physician or surgeon with patients who are mentally and emotionally harassed by fears of what hypertension may do to them would do well to recommend that they procure and read this excellent little book.

—M.T.

Renal Pelvis and Ureter. By Peter A. Narath. New York: Grune and Stratton, 1951. Pp. 439.

This is a valuable contribution to urologic literature, both in content and in organization. The monograph deals in great detail with a topic accorded only a few pages in most urologic texts. For the first time the complete subject is presented under one cover, obviating the need for searching through books on anatomy, embryology, histology, pathology, physiology, urology and roentgenology. Must of the work is original with the author, and the excellent illustrations are his own.

The book opens with an account of the normal embryologic picture of the ureter and pelvis, followed by a detailed discussion of the construction of the normal renal pelvis. In the chapter entitled, "Final Form of the Renal Pelvis" the author describes the differences between the cranial structure and the structure of the caudal pole. He further illustrates how each of these is different from the structure of the middle calices, taking into account the differentiation of major and minor calices and specifying whether a calix is a middle calix or whether it belongs to the lower pole. The author then describes and illustrates anomalies and malformations of the renal pelvis The descriptive matter is accompanied by excellent pyelographic studies and diagrams Separate chapters are devoted to a discussion of the normal anatomic and histologic character of the renal pelvis and the ureter, with illustrations in color

The most interesting material in the book is contained in the chapters dealing with the dynamics of the tonus of the urinary tract and with absorption and resorption in the upper portion of the tract The author describes his method of study, which involves a combination of fluoroscopic technic and fast serial pictures taken during retrograde pyelographic study His comments on the physiologic nature of the upper part of the urinary tract add much to current knowledge

In comparing retrograde and excretory urographic technics, the author expresses the opinion that all patients with urologic disease should be studied by intravenous urographic methods before instrumentation is contemplated He expresses the opinion that, although the intravenous route is more physiologic, each procedure has its place and one is not a substitute for the other Satisfactory results are obtained by excretoryurographic study, and the fact that it is not used more generally can be attributed to the cost and time involved

The author deserves praise for this valuable contribution to the knowledge of the urinary tract His book should be read by everyone interested in urology

DAVID GOMBERG, M D

Textbook of Obstetrics By John F Cunningham New York Grune & Stratton, 1951 Pp 499, with 297 illustrations

This book is an adaptation of lecture notes and is intended primarily for use by students The procedures described are in accordance with the ethical standards of the Roman Catholic Church

The entire subject of obstetrics is presented in only 487 pages of text No bibliographic references are included The medical undergraduate, harassed for time in preparing his various curricular assignments, may find the book useful, but as a reference for later consulation it is lacking in some respects

It is interesting to note that the author, in the chapter entitled "Obstetrical Forceps", expresses preference for the left lateral or Sims position for the parturient The forceps rotation principle of Scanzoni is not presented The author apparently prefers manual rotation of the Kielland forceps The piper and Borton forceps are not discussed

The full advantages of antibiotics in relation to dystocia are not presented, doubtless owing to the usual lapse of time between the preparation and the publication of a book The author advises induction of premature labor for parturients with small palvises, a concept largely abandoned in the United States

Too much space is devoted to technical descriptions of symphysiotomy and pubiotomy These procedures are archaic and have no interest beyond the historical

Improvement in the quality of the illustrations, together with certain minor revisions, would make this a most desirable book for the medical student

ALFRED A KOBAK, M D

Indications For and Results of Splenectomy By Frederick A Coller, Alexander Blain and Gould Andrews Springfield, Ill Charles C Thomas, Publisher, 1950 Pp 100, with 16 illustrations

This book, a monograph in the series *American Lectures in Surgery*, comes from the Departments of Surgery and Medicine, University of Michigan Medical School, and is based on a series of 132 elective splenectomies The authors, after an initial chapter of general considerations in which they point out that splenectomy has developed as an empiric procedure and is still subject to controversy, offer separate short discussions of this operation in connection with thrombocytopenic purpura, Banti's syndrome, Cruveilhier- Baumgarten disease Falty's syndrome, Gaucher's disease, lupus erythematosis and the various anemias There is also a chapter on accessory spleens

The technic of splenectomy is briefly but adequately described The authors generally use inhalation anesthesia (nitrous oxide-ether) They emphasize the careful selection of patients for this form of surgical intervention, particularly of patients with Banti's syndrome

The illustrations, which consist chiefly of photographs, photomicrographs and roentgenograms, are excellent A number of pertinent statistical tables are included The book has the compactness, interest and usefulness generally found in the *American Lectures* series It is well worth the attention of any surgeon who operates on the spleen

M T

Abstracts from Current Literature

The Failure of Tonsillectomy. Hyde, T. L., J.A.M.A. 2:1478-1480, 1951.

Tonsillectomy is the commonest surgical operation and is performed by more different physicians and surgeons than any other. Dr. Hyde, in a general surgical practice at The Dalles, Oregon, found by examining 1,000 consecutive unselected cases that 68 per cent of the patients had some tonsillar remnants. Lymphoid tissue was observed much more frequently in the tonsillar scar. In his opinion, the single characteristic that distinguishes the palatine tonsil from other lymphoid tissue of the pharnyx is the crypt. Other writers have rated tonsil tags remaining in 22 to 80 per cent of patients examined. This indicates that tonsillectomy is not a particularly successful operation.

There was no significant difference between the incidence of residual tags after operations performed by otorhinologists and those done in general practice. Among the 400 patients who had undergone a tonsillectomy with local anesthesia only 59 per cent had tags. This would appear to be a significant difference in favor of local anesthesia, but it may merely reflect the comparative ease of operating in the larger throats of older patients.

Too often, doctors have been enthusiastic for a "slick", "easy" or "quick" method of tonsillectomy and have not paid enough attention to the technical details. Tonsillectomy may be facilitated by the position of the patient. For the patient under a general anesthetic, the Davis type of mouth gag allows the head to hang inverted over the end of the operating table. The surgeon sits in front of the open mouth. The blood from any uncontrolled bleeding runs down into the nasopharnyx and out through the nose. The head mirror provides the best illumination. Dissection of the tonsil is done with a sharp knife. The tonsil is outlined, including all visible tonsil tissue, especially at the junction of the tonsil and tongue. The tonsil edge is grasped with a tenaculum at the superior pole. The dissection then proceeds upward and backward by sharp snips with scissors. Careful dissection of the tonsil often demonstrates the existence of irregular rounded lobules of tonsil, 2 to 20 mm. in diameter, extending out beyond the so-called capsule into the peritonsillar tissue.

Arterial bleeding is controlled by clamp and tie as in any other operation. The Sten clamp with the jaws curved at 45 degrees seems the most convenient for arteries. The tie is made with a 20-inch strand of No. 20 crochet cotton. The dissection by scissors is carried completely through to the base of the tongue. The snare is not used.

When the operation is done with the region under local anesthesia, the patient is seated on an operating table, which is arranged with the foot down and the back up to form a chair. The knee strap is tightened across the lap so that the patient can lean forward against it. The table is raised to full height. The surgeon sits in front of the patient, who leans forward so the mouth opens downward. Blood and saliva drain downward and out of the mouth rather than into the pharnyx. After infiltration with the anesthetic, the dissection is begun by an incision as afore described, all of the tonsil being outlined. The tenaculum grasps the tonsil at the lower anterior part, the junction of the anterior pillar and the tongue. The dissection proceeds upward and backward with no opportunity for blood to collect in a pool at the line of dissection. In this position, each tonsil can easily be removed without the patient's coughing or gagging, except for an occasional spurting artery which may jet across into the pharnyx.

Two hundred and sixty-two patients have been operated on in this manner, with 18 per cent showing lymphoid tissue in the tonsillar area. In only 2 cases could a remnant of tonsil be found.

H. J. Rosevear, M.D.

Antethoracic Jejunal Transplantation for Congenital Esophageal Atresia with Hypoplasia of the lower Esophageal Segment. Longmire, W. P., Surg., Gynec. & Obst. 93:310, 1951.

Occasionally children are born with extreme hypoplasia of the lower portion of the esophagus and atresia, so that they will starve to death unless a gastrostomy is quickly done for feeding purposes. The diagnosis can be confirmed by roentgen studies and extrapleural mediastinal exploration. In such cases, Longmire recommends that a loop of jejunum be placed subcutaneously in front of the sternum, as a substitute esophagus The operation can be done in two stages after a right sided gastrostomy has been functioning a short while A left sided cervical esophagostomy is performed at the same time as the gastrostomy When the child's condition permits, usually a short time after birth, antethoracic jejunal transplantation is done The midline incision extends from just above the navel to just below the upper esophageal opening in the left side of the neck The skin flaps over the sternum are undermined and the abdomen is entered throughout the abdominal portion of the skin incision Two or three primary mesenteric vessels are ligated as near to the mesenteric arcuate vessels as is possible Thus a sufficiently long loop of jejunum can be separated from the intestinal tract It remains attached to its mesentery only where a large vessel enters to supply this loop with blood Then this jejunal loop is divided near the ligament of Treitz and, distally, beyond the site of ligation of the primary mesenteric vessels (This latter portion is later to become anastomosed to the cervical portion of the esophagus, which is Stage 2 of this procedure) The severed portions of the remaining jejunum are anastomosed end to end Then the proximal portion of the isolated jejunal loop (which is close to the remaining mesenteric blood supply for this loop, is anastomosed to the anterior aspect of the stomach, after which this freed jejunal loop is placed subcutaneously in front of the thorax and the skin flaps closed over it (Eventually, and preferably, an intrathoracic position for this transplanted jejunal loop may be possible) After about two weeks the edema of the distal portion of this jejunal loop (which was left protruding through the upper end of the skin incision) subsides, and then Stage 2 of the procedure (cervical esophagojejunal anastomosis) can be performed In the 2 cases in which he has performed this operation, Longmire has obtained a very satisfactory result

RICHARD A LEONARDO, M D

Surgical Treatment of Intra-Oral Cancer. Walker, H S J, J M A Alabama 20 357, 1951

This article deals with the general characteristics of intra-oral epidermoid carcinoma, and discusses the histology, metastases, multicentric origin, diagnosis and ultimate course Surgical and irradiative treatment are compared, as are electrosurgical and "cold knife technics Escharotics are mentioned only to be condemned The general factors in extensive operations on the head and neck surgery are outlined, including radical neck dissection The effect of sacrifice of certain structures, unilaterally and bilaterally, including nerves and blood vessels, is outlined The article ends with a discussion of carcinoma in specific regions, such as the tongue, the floor of the mouth, the buccal mucosa and the gingivae

RAYMOND GREEN, M D

Observations on Human Abortion Ova Monie, I W, Manitoba Med Rev, 1951

The products of abortion in 90 cases are analyzed, discussed and correlated as far as possible with the maternal pathologic picture

It has been suggested that, since so many aborted embryos are abnormal, it is as well to let Nature take her course, allowing such embryos to die *in utero* and undergo expulsion or resorption but one of the aims of antenatal research is to discover the factors that initiate embryonic abnormality, in the hope that some way to control them may eventually be found

EDMUND LISSACK, M D

Acute Perforation of Gastroduodenal Ulcer Treated Conservatively. Scott, E, Brit M J 1 675 1951

The author hoped to prove that surgical intervention should no longer play a predominant part in the immediate treatment of perforations In his opinion, since in every perforation the peritoneal exudate is protective, the removal of the latter by suction and swabbing is serious for the patient Also, it is observed at operation that in a large percentage of cases the perforation has already become sealed off Although he admits that closing the perforation prevents further leakage, he points out that if continuous suction is used (this is a part of the conservative regime) there is little probability of further leakage Other features recommending nonoperative management are the avoidance of postoperative shock, postanesthetic complications, wound infection, incisional hernia and spread of localized peritonitis He records 15 cases of unselected perforated gastroduodenal ulcer, without fatalities The duration of perforation ranged from two to thirteen hours The number of days in the hospital ranged from twelve to forty-nine The regime consists of continuous suction, intravenous fluids, morphine, chemotherapy and deep breathing exercises

RAYMOND GREEN, M D

Two Cases of Simmonds' Disease Due to Post Partum Necrosis of the Pituitary Gland. Hausmann, W., and A. Kalinowski, A., Brit. M. J. 1:924, 1951.

Patients with Simmonds' disease present a picture of deranged pituitary function that can not be paralleled by operating on animals. The title "Simmonds' disease" should be restricted to this type of case (pituitary failure) due to postpartum necrosis of the pituitary gland as described in Simmonds' original article.

Two cases are presented in which the function of the pituitary gland had been so disturbed that the production of thyrotropic, gonadotropic and adrenocorticotropic hormones was reduced. There were myxedema, subnormal temperature, a slow pulse, and a low basal metabolic rate, with intolerance to cold. The lack of gonadotropic hormone caused cessation of menstruation, with sexual involution and the absense of pubic hair. The lack of the adrenocorticotropic factor reduced the blood pressure, the blood sugar level and ketosteroid production. The myxedema and the lowered basal metabolic rate resulted from lowered amounts of thyrotropic hormone.

Adrenal cortical hormone and doca brought satisfactory recovery. Since the sodium and potassium levels were not grossly upset, the doca must have other functions in these cases. Methyl testosterone seemed to help in maintaining the patients in a fair state of health.

A. H. LETTON, M.D.

Intraspinal Epidermoid Tumor. Moore, W. W., and Walker, E., Neurosurg. 8:343, 1951.

The subject of dermoid and epidermoid tumors of the spinal canal is introduced, reference being made to their relation to teratoids and teratomas and to their general management and behavior. An interesting case with an unusually long history is described in detail. The patient was a 52-year-old man in whom the lower limbs were first involved at the age of 10. Since that time various procedures had been carried out to improve his deficiencies, but the primary lesion had not been treated. The authors diagnosed and removed a tumor lying beneath the dura mater, extending from the first to the fourth lumbar levels. The pathologic diagnosis was epidermoid of the spinal canal. Subsequently, the patient's symptoms were greatly improved.

LYON H. APPLEBY, M.D.

Surgical Treatment of Duodenal Ulcer. Crile, G. Jr., Am. Surg. 17:558, 1951.

Duodenal ulcer is not due primarily to lack of resistance of the mucosa (as appears true of gastric ulcer) but rather to vagal stimulation, which results in hypersecretion and hyperacidity of the gastric juices, according to the studies of Dragstedt. A radical gastric resection, in the hands of an especially skilled gastric surgeon, is curative of this psychosomatic disturbance, but it is Crile's opinion that the average surgeon is often not justified in performing this operation for the relatively benign lesion like a duodenal ulcer. For instance, if the operative mortality is 5 per cent or more, Crile recommends that the surgeon abandon gastric resection and treat the duodenal ulcer by vagotomy plus gastroenterostomy. Neither operation alone is successful, but the combination will cure the vast majority of duodenal ulcers that have failed to respond to repeated medical therapy. Crile cites a recent survey made by the American Gastroenterological Association in which 98 per cent of 1,000 consecutive patients with duodenal ulcer remained free of ulcer symptoms after combined vagotomy and gastroenterostomy. He adds that these two operations act synergistically, abolish the ulcer diathesis and prevent recurrent ulceration more effectively than does the average gastric resection in the hands of the average surgeon.

RICHARD A. LEONARDO, M.D.

Carcinoma of Sweat Glands. Stout, A. P., and Cooley, S. G. E., Cancer 4:521, 1951.

This paper commences by trying to crystallize the criteria for diagnosing a true sweat gland carcinoma. Investigation of the literature on the subject has caused the authors to discard many of the lesions so described. There is a brief study of previous work on the subject. There are 12 case reports, in three groups: Group 1, lesions with metatases; Group 2, lesions without metastases, and Group 3, sweat gland epithelioma. There are twenty-three illustrations showing the gross and microscopic appearance of the tumors discussed. The summary includes the clinical and pathologic changes peculiar to these tumors and makes a plea for more concise diagnosis of sweat gland carcinoma. It is suggested that this be restricted to these rare glandular infiltrating and metastasizing tumors that arise in the skin.

LYON H. APPLEBY, M.D.

Fractures of the Sphenoidal Sinus with Cerebrospinal Rhinorrhoea Walpole Lewin, and Hugh Cairns, Brit M J Jan 6, 1951

It is now generally accepted that cerebrospinal rhinorrhea following a head injury indicates a dural tear related to a fracture involving the paranasal sinuses The authors emphasize the fact that a fascial repair of the torn dura is required to insure against future intracranial infection

Most of the fractures involve the frontal or ethmoid sinuses, but exceptional ones may involve the petrous portion of the temporal bone, and the cerebrospinal fluid passes into the nose by way of the middle ear and the eustachian tube The authors discuss the anatomic background, the incidence and the mechanical causes of fracture and present a series of 84 cases of cerebrospinal rhinorrhea in which the incidence of intracranial infection was 19 per cent In this series a dural tear over the sphenoidal sinus was observed in 11 cases or 13 per cent, and was the only tear related to the paranasal sinuses in 5 or 6 per cent This study indicates that the risk of meningitis is greater in sphenoidal sinus fractures with dural tears because of the proximity of the basal cisterns In the authors' series the main clinical characteristic was the profuse rhinorrhea

Another sign that may be helpful in diagnosis roentgenographic demonstration of air in the cisterna chiasmatica "Neighborhood signs," such as evidence of damage to the hypothalamic region, the optic chiasm or the carotid artery, were present in nearly one-half of the cases involving the sphenoidal sinus

The difficulty of repairing a dural tear over the sphenoid sinus may be considerable and thus the surgeon must be prepared to make a full bifrontal exposure and if need be, to divide the olfactory tracts

In 3 of the 5 involving the sphenoid sinus there *developed pneumococcic meningitis, in* 2 within a week of injury and in eight months later In 2 cases this occurred before penicillin was available, and the patients died The third patient was treated with penicillin and recovered Thus 3 patients underwent successful dural repair They have been followed up for nearly four years and have had no further rhinorrhea or intracranial infection, and all are well and working

CHARLES C ABBOTT, M D

Bilateral Carcinoma of Male Breast After Estrogen Therapy. McClure, J A, and Higgins, C C, J A M A 146 7, 1951

The reported cases of cancer developing in the male breast after estrogen therapy are briefly commented upon It is noted that questionnaires sent to 150 urologists asking for reports on mammary cancer in patients treated with estrogens for prostatic cancer showed that only 1 out of 17,000 patients was reported on A detailed description is given of a lesion diagnosed as transitional cell carcinoma of the bladder The patient, a man, was treated with irradiation and stilbestrol Carcinoma simplex developed subsequently The authors *advise preliminary investigation of the family* history and examination of the breasts of patients subjected to estrogen therapy

LYON H APPLEBY, M D

Glinski and the Aetiology of Simmonds' Disease Robertson, J Douglas, Brit M J 1 921, 1951

This is a reevaluation and reminder of a paper written by Glinski thirty-seven years ago, in which he drew attention to evidence indicating the anterior rather than the posterior lobe of the pituitary gland is "the active and more important division"

Glinski drew attention to the difference in size of the pituitary gland in virgins, nonvirgins and pregnant women This difference appeared in the size of the anterior lobe He also demonstrated that the gland is pregnancy was pale as compared to the reddish brown color of the normal gland In his opinion this was due to changes in ovarian function, for castration of male animals produced enlargement of the pituitary

He cited 2 cases of necrosis of the anterior lobe, which, he stated, was undoubtedly due to thrombosis of the pituitary arteries

Simmonds' early papers are reviewed and his reference to Glinski is noted

"This article," says Dr Robertson, "has been written with the object of making Glinski's papers better known, as they do not appear to be generally available in this country It is interesting to note that some 37 years ago Glinski advanced the hypothesis that necrosis of the anterior pituitary was the cause and not the effect of atony of the uterus, hemorrhage, *and collapse in women at childbirth*—a new subsequently elaborated by Taylor and Shea (1944), but not accepted by Sheehan (1948)"

A H LETTON, M D

The Blood Vessel Bank. Keefer, E. B., Andrus, W., Glenn, F., Humphreys, G. H., Lord, J. W., Murphy, W. B., and Touroff, A. S., J.A.M.A. 145:888, 1951.

Under present circumstances the modern blood vessel bank requires the cooperation of a number of institutions. Especially does it require the contribution of material from as many hospitals as possible within a large medical center or in a large city.

Blood vessel grafts should be taken from donors preferably under 45 years of age. Material selected should be from bodies free of malignant and marked degenerative and infectious diseases. Blood vessels of various sizes must be obtained within six hours post mortem.

The method of storage and sterilization of solutions and material is outlined in considerable detail in order to illustrate the difficulties and the necessary materials required for the proper maintenance of a blood vessel bank at present. The preparation of solutions; the bacteriologic studies; antibiotic preparations added to the solutions to maintain bacterial free conditions; these are some of the problems discussed. Careful pathologic and tissue culture studies are necessary when each donor graft is taken. Microscopic studies that reveal alterations from the normal will cause the graft to be discarded. The graft should be removed in a manner as close as possible to that which follows the technique of the operating room.

MORRIS T. FRIEDELL, M.D.

Lowering Mortality from Bulbar Poliomyelitis. Galloway, T. C., and Seifert, M. H., J. Iowa State M. Soc. 41:341, 1951.

In the author's opinion, the general attitude of pessimism associated with bulbar poliomyelitis and the idea that overwhelming virus infection of vital centers renders successful treatment unlikely are not warranted. They are convinced that few bulbar polio patients need die if treatment is dispensed in accordance with a sound appreciation of the physiopathologic nature of the disease, and that the serious results are produced by anoxia and carbon dioxide excess.

The fundamental disturbance in bulbar polio, the authors suggest, is an obstructed airway stemming from the associated disturbance in the swallowing mechanism which permits the accumulation of secretions, food and vomitus in or over the airway. Treatment based on this concept led to no death among 12 successive patients with pharyngeal paralysis treated early in an area where the mortality rate at the same time was 27 to 38 per cent.

They recommend, in order of importance, postural drainage; continuous suction; tracheotomy if necessary; parenteral feedings and the use of the respirator if there is central depression, and the administration of oxygen.

The restlessness associated with anoxia, while demanding additional oxygen, may lead to the fatal mistake of sedation. In the desperately ill patient the ordinary symptoms of anoxia are not easy to evaluate and, when overlooked, have rapidly cumulative effects which make the reversibility of the cellular changes less likely. The bulbar polio patient in whom the swallowing mechanism is involved is thus in danger of drying of anoxia by drowning in his own secretions.

For postural drainage the authors advocate elevation of the bed to a 20 degree or a 25 degree angle. The secretions are removed by suction through the oral cavity as fast as they collect. The apparatus utilized must be an efficient one, and the Venturi type is strongly recommended. Close medical supervision is extremely important. Fluids, electrolytes, vitamins and calories are provided parenterally until swallowing is possible, usually from the fifth to the tenth day. Antibiotics, never sulfonamides, are used for preventing infection.

Abundant experience has proved the value of tracheotomy when the patient is seen late. The administration of oxygen is not so important as the elimination of accumulated carbon dioxide, for which an airway is the most vital feature.

Polio in pregnancy has had a bad record because the filled uterus embarrasses respiration and the heart. If the patient is near term with a viable fetus the authors advise early tracheotomy followed by cesarean section which has a good prognosis.

THOMAS WILENSKY, M.D.

***Plasmosan in the Prevention and Treatment* of Shock.** Arden, G. P., Mandow, G. A., and Stoneham, F. J. R., Brit. M. J. 1:1099, 1951.

The authors used Plasmosan as a plasma substitute in 37 major surgical cases, and found it to be effective in maintaining normal blood pressure when plasma was not available. In the presence of shock, it restored normal blood pressure for sufficient time to effect economy in the use of whole blood.

HOWARD S. STERN, M.D.

Experimental Gastric Devascularisation and Denervation—Physiologic Gastrectomy (La Devasculatisation Et l'Inervation Gastrique Experimentales)

Gastrecetomie Physiologique Debrulle, M J de Chir 67 396, 1951

The excellent results of the different technics of a radical gastric resection in cases of gastric or duodenal ulcer resistant to medical treatment should not prevent the consideration of less mutilating interventions if real advantages can be achieved by them The bivagotomy of Dragstedt and gastric devascularization in the treatment of duodenal ulcers have their supporters Radical healing means not only healing of the existing ulcer by operative measures but the prevention of a relapse caused by the excessive quantity of hydrochloric acid in contact with the mucous membrane of the duodenal or gastrojejunal anastomosis It is believed that even the gastric devascularization without gastroenterostomy gives satisfactory results This paper describes the experimental results obtained by the latter method It is concluded that gastric devascularization in dogs with experimental ulcers was not of positive benefit in preventing marginal stitch ulcers, but the incidence of ulcers after devascularization was less frequent and the curative influence on existing ulcers was noteworthy On the basis of these experimental data, gastric devascularization as a surgical therapeutic procedure should be considered in duodenal ulcer therapy

W K Frankel, M D

Hyperthyroidism in the First Year of Life

Fischer, P M S, Brit M J 1 217, 1951

A review of the available literature shows that only 5 cases of hyperthyroidism occuring in the first year of life have been reported These cases are cited and 1 new case is added

Baby P was born to a 21-year old European mother on May, 20, 1950, after a normal, easy labor In February 1950 the mother became irritable and nervous One week later severe thyrotoxicosis developed almost overnight She was admitted to the hospital and given 200 mg of propylthiouracil daily A few weeks later she was also given Lugol s solution This regime helped considerably but did not completely control the disease

Immediately post partum, Baby P cried lustily and appeared normal in all respects except for slight restlessness and numerous "crying spells " During these spells some cyanosis was apparent On the fourth day he was extremely restless, and his breathing was rapid and weak Cyanosis was present, and a temperature of 102 F was recorded Oxygen and penicillin were administered

On the fifth day a temperature of 104 F was recorded The pulse was uncountable, but the rate was estimated at 240 per minute The skin was dry, and dehydration was present The blood count and urinalysis revealed no abnormality

Subcutaneous infusions were given and within an hour the temperature was 102 F and the pulse rate 180 per minute This therapy was contined for the next two days Penicillin was discontinued The pulse rate remained 180 to 200 per minute On the sixth day a fullness of the thyroid gland was noted the upper poles extending up to the hyoid bone, with the lower poles just above the sternoclavicular joint

On the eighth day exophthalmos was noted The skin was very oily He was given a high caloric diet and vitamins His temperature stayed normal until the thirteenth day, when he vomited and his temperature rose to 100 F His course was rather rough through the eighteenth day, when he seemed some what better but was far from a satisfactory condition Two minims of Lugol s solution was given twice daily, and he began to gain weight

By the twenty-eighth day his condition was much better He was seen again at the age of 4 months, at which time he seemed normal in all respects His development was normal according to the Gesell scales

A discussion of the etiologic theories advanced in this case is included

A H Letton, M D

Transabdominal Splanchnic Anesthesia for Gastric Surgery.

Sowers, B F, Am J Surg 1 800, 1950

Dr Sowers reports on splanchnic anesthesia, which has proved useful in performing gastric operations This technic is somewhat similar to the Ogilvie technic except that Ogilvie uses a long spinal needle with a short beveled end Injection is made between the aorta and the vena cava in the area above the lesser curvature of the stomach after the space has been identified by the index finger This technic is especially suitable for patients the older age group when combined with local and intercostal block

M T Friedell, M D

In Memoriam

HERBERT ACUFF

M.D., F.A.C.S., F.I.C.S.

1886 1951

Dr. Herbert Acuff of Knoxville, Tennessee, formerly President of the United States Chapter and since 1950 President of the International College of Surgeons, died very suddenly of a heart attack in his home city on Friday, November 2. His untimely passing is a tragic shock not only to the College but to everyone who knew him.

Dr. Acuff was born on August 22, 1886, in Washburn, Tennessee. He was educated in the public schools of Washburn and took his medical degree in 1911 at the School of Medicine of the University of Louisville. His internship was served at the Knoxville General Hospital. As a postgraduate student he spent six months at the Mayo Clinic; in 1914 he studied in Vienna and Berlin, and in 1917 at the University of Pennsylvania and at Bellevue Hospital, New York. In 1937 he did postgraduate work in England, Scotland (Edinborough) and Sweden. In addition, various studies at a number of clinics were included in his postgraduate training.

Throughout his career Dr. Acuff never ceased in his pursuit of such knowledge and skill as would enable him to serve his patients better. Academically always sound and thorough, he never permitted the technical aspects of learning to overshadow the human element, nor did he ever forget, even momentarily, that the patient's welfare is the primary concern of a man dedicated to the profession of healing.

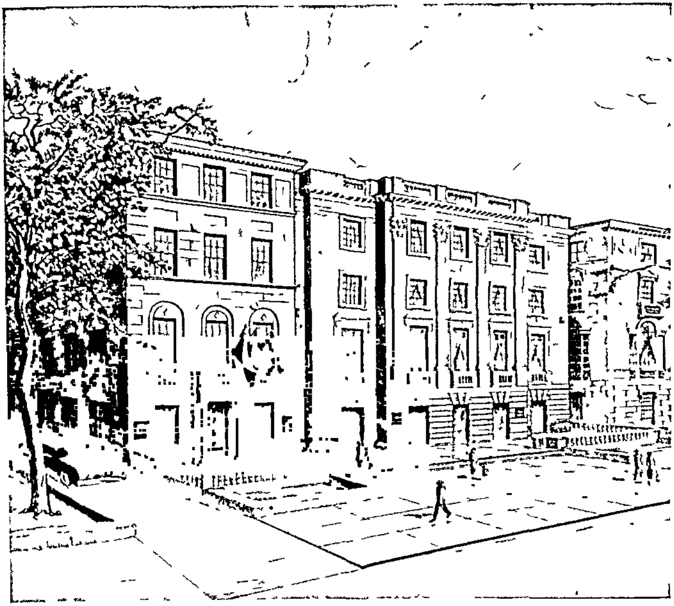
He became increasingly interested in surgery, which finally absorbed his attention above all other fields. In 1941 he became a Fellow of the International College of Surgeons and in 1948 was chosen President-Elect of the United States Chapter.

As a surgeon, Dr. Acuff achieved and maintained an impressive balance between the altogether conservative and the incautiously radical. Endowed by nature with that reassuring calmness of approach which means so much to the patient and provides the surgeon with so reliable a safeguard, he became a bulwark of strength to those who sought his professional services.

As a Fellow of the International College of Surgeons Dr. Acuff typified the ideal. He was tireless, enthusiastic, never too busy to help when help was needed. No less active in international surgical interests than in the affairs of the United States Chapter, he became known throughout the world as a representative American surgeon of the highest type. It was impossible to question his wholehearted support of the College principle that science recognizes no racial, national or religious boundaries. His colleagues here and abroad found him always accessible and ready to share his knowledge and experience without stint. He was a frequent contributor to this Journal and to many other scientific publications, and a sought-after participant in many professional assemblies both here and abroad. He became President of the International College in 1950.

Dr. Acuff was a member of the American Medical Association, the American College of Surgeons, the Tennessee State Medical Society, the Southern Medical Association, and the Knox County and Southern County Medical Associations. He was vice-president of the Southern Surgical Congress and of the Tennessee Division of the American Cancer Association. He headed the Acuff Clinic in Knoxville, which he founded. He was chief of staff at St. Mary's Memorial Hospital; visiting general surgeon at the Knoxville General and the Riverside-Fort Sanders Hospitals; Consulting Surgeon at the Beverly Hills sanatorium; chief consulting surgeon to the Pruden Coal and Coke Company, and official surgeon to the Southern Railway System.

Dr. Acuff is survived by his wife, the former Miss Lola Pruden, whom he married in 1915, and by a daughter. The heartfelt sympathy of the International College is tendered to these bereaved, whose loss alone can be greater than that of Dr. Acuff's friends and colleagues. He will be sorely missed not only in the Assemblies he helped to make vital and memorable but in the perpetual interchange of correspondence and companionship.



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and the

UNITED STATES CHAPTER

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Publication Plans for 1952

CIRCULATION

Commencing with the January issue, the circulation of the Journal of the International College of Surgeons will be increased to 8,500 copies monthly.

This increase was necessitated by the induction of about 1000 new members of the United States Chapter on September 13, 1951 during the Annual Assembly held in Chicago, and by the establishment of our rotating distribution plan whereby 500 Journals will be mailed monthly to hospital executives in all Latin American countries, Cuba, the West Indies, Mexico, Spain and Portugal.

DISTRIBUTION

United States (all States)	5,500
Latin America, Cuba, West Indies, Mexico, Spain and Portugal	2,000
Canada, England, Continental Europe, South Africa, Philippines, India and other countries in The Far East	1,000

Approximate figures. The final figures will be recorded in Standard Rate and Data.

SPANISH SECTION

The Journal will carry insert advertisements in Spanish and Portuguese. The complete issue including the Spanish and Portuguese inserts will be mailed to our members, subscribers and hospital executives in all Spanish and Portuguese speaking countries. Rates for inserts on request.

SPECIAL ISSUES

The March 1952 issue will be published in connection with the EIGHTH BIENNIAL INTERNATIONAL ASSEMBLY of the INTERNATIONAL COLLEGE OF SURGEONS to be held in Madrid, Spain, May 20-23rd 1952. Advertisements will be accepted in English, French, Spanish or Portuguese.

We will distribute several thousand copies of this issue to surgeons from various parts of the world who will attend meetings of the College in Paris, Bordeaux and Barcelona prior to the International Assembly in Madrid.

The August 1952 issue will be published in connection with the SEVENTEENTH ANNUAL ASSEMBLY of the United States and Canadian Chapters of the International College of Surgeons, to be held at the Stevens Hotel in Chicago on September 2nd through the 5th.

For detailed information communicate with:
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COLLEGE INTERNATIONAL DES CHIRURGIENS

FOUNDED BY DR MAX THOREK

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Vol. XVI DECEMBER, 1951 No. 6

A Pioneer Passes

DR. CUSTIS LEE HALL, scientist, humanitarian, leader, teacher and friend, has left us and the organization he served so long, in the only manner that could have compelled him to do so, his death. Only those who worked with him, knew him well, and felt the serenity and strength that lay hidden beneath his quiet exterior personality can measure his loss.

He was a man of few words, was Custis Lee Hall; thoughtful, contemplative, profoundly a scholar and above all unassuming. But when he spoke or expressed himself in writing, it was with the authority that comes only from certainty within. Those who knew him best know also that his mind and spirit were adventurous, even daring, as those of the true intellectual are apt to be. As he was a pioneer member of the International College of Surgeons, fired from the beginning with an inner vision of what the College might become, so was he a pioneer in the long, difficult march toward world-wide amity and brotherhood of man.

He was my own close friend for many years. I never ceased to marvel at his resourcefulness, his patience, his calmness under stress, and his passion for justice. I never knew his judgment to be colored by personal emotion; yet he was capable of emotion so deep, where any question of human rights was concerned, as to convey the sense of a tremendous advancing power. We had many talks about the International College, its purposes, its prospects and its welfare, and on this subject his warmth and enthusiasm were unbounded. His convictions on the subject of personal and professional ethics, both within and among professional organizations, are well known to all who knew Custis or came within the sphere of his influence.

He was irenic, but he could fight if need be. He had great tact, but was none the less forceful for that. He was incapable of compromise with an ideal; once he had formulated a principle he stood by it through thick and thin, whatever the cost to himself. Such men are rare, and the loss of such a man is tragic indeed for those he leaves behind.

There is no question of the intensity and extent of Dr. Hall's influence on surgery, not only in the United States but throughout the world. He traveled widely, unsparing of his energy and time, to share the knowledge accumulated by American surgeons with those working under handicaps in less fortunate situations everywhere. He had the true international mind and will, which do not in any sense deny or detract from a man's devotion to his

Dr. Custis Lee Hall, F.A.C.S., F.I.C.S.

1888 1951

President, United States Chapter, International College of Surgeons, 1947-1949 native country, his own good fortune in enjoying the immeasurable benefits and facilities of surgery in America he wished only to share with others wherever he found them He became and remained a great exponent of democracy, whose actions were even more impressive than his words He had severe illness to contend against, but neither illness nor any other handicap ever deterred him from what he considered his natural and necessary work

As an officer of the International College of Surgeons he gave of himself without stint As a prime mover in organization of the United States Qualifications Board he took no personal advantage of the situation, but surrounded himself with other outstanding surgeons and sought their counsel, concerned always and only with the necessity of setting up impeccable standards and maintaining them As a man and a friend he had few equals in loyalty, staunchness and generosity of feeling His family life was lived on an equal plane, his devoted wife, who is president of the Women's Auxiliary of the College and has shared all his interests to the full, understood his aspirations and those of the College and worked with him faithfully throughout the years One son and three daughters also survive him It is safe to say that they have a proud heritage

In a group of the nature of the International College of Surgeons, the individual contribution of any devoted and dynamic member means more than words can tell In Dr Hall these qualities were combined to perfection, and our loss is heavy indeed We shall miss him both in counsel and in action, but we shall miss him still more as a companion in thought and purpose, in the natural fraternity created by our common professional interests and enriched by individual differences of approach The place of such a man can never be filled

— MAX THOREK

False greatness is unsociable and unapproachable Conscious of its weakness it hides itself, or, at least only allows itself to be sufficiently seen to impose and to avoid showing how mean it really is True greatness is free, gentle, affable It does not shun intercourse and contact with others It loses nothing by being seen closely, and gains by being known It stoops to inferiors out of sheer kindness, and recovers its natural position without effort Sometimes it so far unbends as to neglect its privileges, but is always able to resume and maintain them It laughs and jokes, but with dignity One approaches it freely, and yet not without some restraint Its characteristic is an easy nobility which inspires respect and confidence By it, princes, while they appear great and very great even, do not make us feel our own littleness —La Bruyere

Original Articles

Mediastinal Tumors

Angiocardiographic Study of Sixty-Five Proved Cases

CHARLES T. DOTTER, M.D., AND ISRAEL STEINBERG, M.D.
NEW YORK

ANGIOCARDIOGRAPHY is a roentgenographic method of diagnosis in which roentgen films of the heart and great blood vessels are made during their opacification by rapidly injected intravenous radiopaque solutions. The technic achieves visualization of the mediastinal veins, the chambers of the heart, the pulmonary vessels and the aorta during life. In the fourteen years that have passed since its introduction,[1] angiocardiography has proved to be a practical, safe and, in certain instances, indispensable method of preoperative investigation of mediastinal tumors. Surgery constitutes the generally accepted therapy for nonlymphomatous mediastinal tumors. The decision to perform a thoracotomy and its successful outcome may significantly be influenced by the information obtainable angiocardiographically.[2] This report covers a fourteen-year experience with angiocardiographic procedures and includes 65 proved mediastinal tumors.

In the conventional thoracic roentgenogram the heart, mediastinum or mediastinal tumors are outlined by virtue of the contrast of their borders as compared to the relatively radiolucent air-containing lung fields. Additional information regarding displacement of thoracic structures may be gained by tomographic, tracheographic and bronchographic study and by examination of the barium-filled esophagus. As a rule, only the outer border of a mediastinal tumor may thus be delineated, the medial or inner contours being lost in the homogeneous mediastinal shadow. Mediastinal vessels and the individual cardiac chambers likewise merge with this shadow. Through its unique ability to render the cardiovascular structures opaque, the angiocardiographic technic permits delineation of the hidden inner borders of a mediastinal tumor. It thus affords a way for estimation of the size and configuration of the tumor and the effects produced on cardiovascular structures. Since, unlike aneurysms, tumors do not become opacified during angiocardiographic procedures, the distinction between the two is usually made with ease.[2] No longer should it be necessary to resort to exploratory thoracotomy to establish the diagnosis of intrathoracic aneurysm. Other vascular abnormalities may occasionally simulate mediastinal tumor masses, e, g., the tortuous buckled innominate artery, the dilated superior vena cava and the tortuous arteriosclerotic ascending or descending thoracic aorta. It is a corollary that mediastinal tumors often are responsible for clinical and roentgenographic observations suggesting the presence of aneurysm. Here again, by revealing the intact cardiovascular structures, angiocardiographic examination is decisive.

Since there is variation in the vascular changes produced by different forms of tumor, depending on their location and invasive powers, angiocardiographic investigation may offer variable informa-

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From the Department of Radiology of The New York Hospital: Cornell Medical Center, and the Medical Service (Chest Section) of the Veterans' Administration Hospital, Bronx, New York.

Aided by grants from the Mallinckrodt Corporation and the New York Heart Association.

Read at the Sixteenth Annual Assembly of the United States Chapter, International College of Surgeons, Chicago, Sept. 11, 1951.

Reviewed in the Veterans' Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are the results of their own studies and do not necessarily reflect the opinion or policy of the Veterans' Administration.

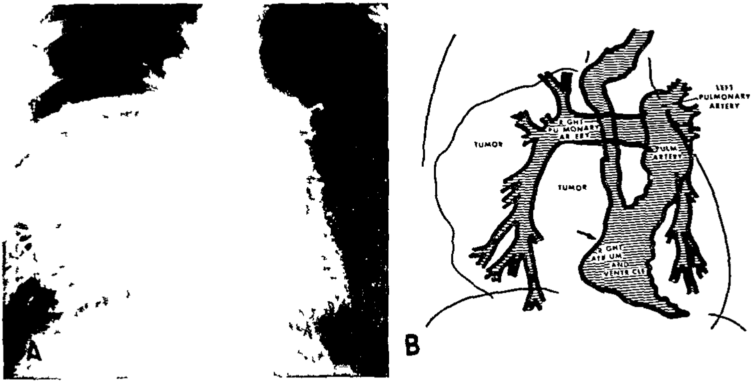

Fig 1 —Dermoid cyst The patient was an asymptomatic 17 year-old girl with a large right anterior paramediastinal mass discovered on routine roentgen examination *A*, angiocardiogram at two seconds The pulmonary arteries are essentially normal, there is displacement of the right atrium and the superior vena cava by the medial border of the mass *B*, tracing of *A* At operation a large dermoid cyst was removed

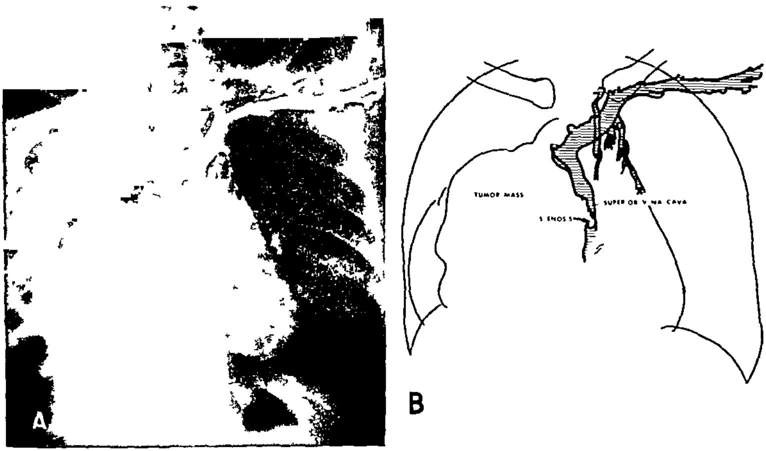

Fig 2 —Malignant mediastinal teratoma The patient was a woman aged 22 with clinical evidence of obstruction of the superior vena cava *A* frontal angiocardiogram at two and a half seconds, showing marked but incomplete obstruction of the superior vena cava, which, with the right atrium, is shifted to the left by a large mass *B*, tracing of *A* At operation an inoperable teratoma was observed with extensive invasion of the vena cava Death occurred within three months *(From Dotter, C T and Steinberg, I Angiocardiography New York Paul B Hoeber, Inc, 1951)*

tion as to the operability of a given mass. Whereas benign tumors tend to dislocate and spread the blood vessels, occasionally producing obstruction by external pressure, malignant growths frequently result in irregular, sharp occlusion or polypoid invasion of the vessels they surround. Both benign and malignant tumors may be simulated by non-neoplastic conditions, such as thrombosis of the superior vena cava following mediastinitis or trauma. When tumor diagnosed by biopsy or cellular study is known to be responsible for significant vascular stenosis within the mediastinum, however, angiocardiographic study may save the patient an unnecessary operation.[4]

Contrast visualization also permits the thoracic surgeon to plan his operative attack in the most profitable manner. By giving information as to the structures lying immediately behind or next to the tumor, it speeds the subsequent dissection and may aid in preventing catastrophe caused by accidental perforation of a major blood vessel or cardiac chamber. It is readily appreciated by the thoracic surgeon that during dissection of a large mediastinal tumor a good view of the lesion is available only from the front. Another advantage of the angiocardiographic technic is that by demonstrating the extent of the tumor mass it may direct the surgeon's attention to suspected sites of spread. If one investigates such areas immediately on opening the thorax it may be possible to establish the true nature of the disease, thus eliminating unnecessary and time-consuming dissection.[5]

Angiocardiographic procedures in our hands have been employed in the study of 65 histologically proved primary mediastinal tumors. These cases are listed according to histologic type (modified after the classification of Andrus and Heuer[6]) in the accompanying table. A concept of

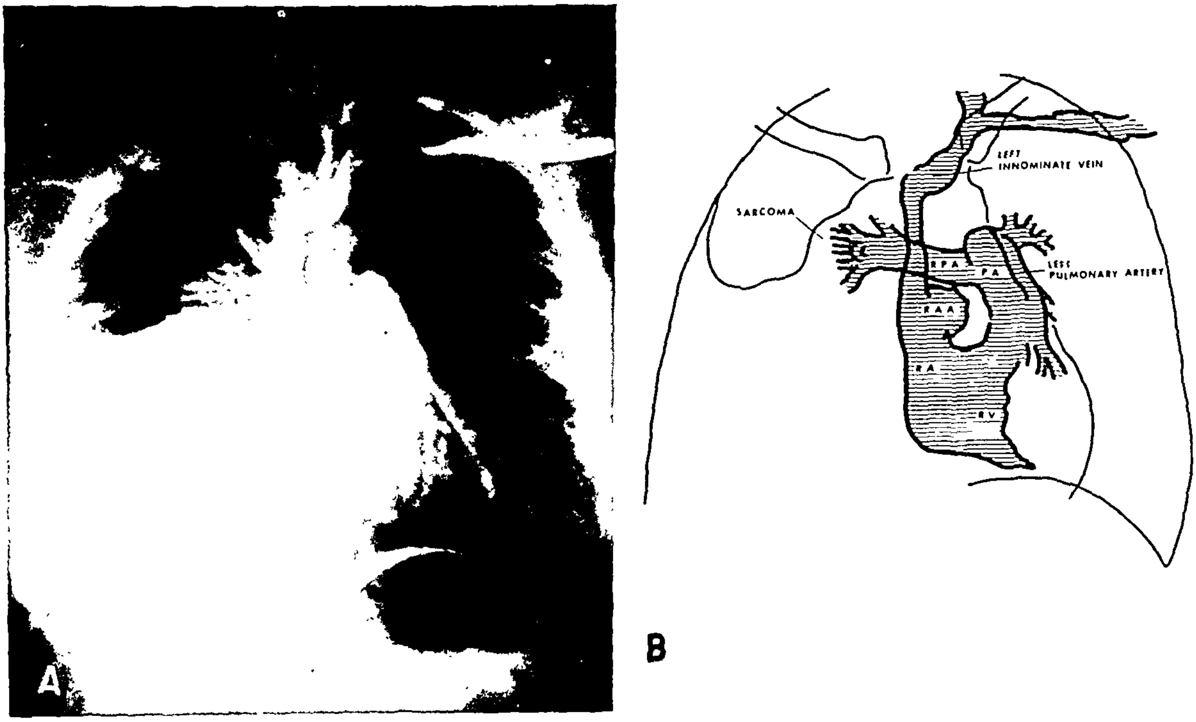

Fig. 3.—Fibrosarcoma of mediastinum. The patient was a girl aged 15 with a history of right-sided chest pain and loss in weight. *A*, frontal angiocardiogram at two and a half seconds. A large mass projects into the right lower lung field and, associated with right pleural effusion, has caused a shift of the heart to the left and elevation of the segmental arteries of the right lower and middle lobes. Vascular obstruction is not demonstrated. *B*, tracing of *A*. At operation an inoperable fibrosarcoma was observed. Death has since ensued. *(From Dotter, C. T., and Steinberg, I.: Angiocardiography. New York: Paul B. Hoeber, Inc., 1951.)*

mediastinal tumors must take into consideration their embryonic development. Embryonic rests occurring when the diaphragm and heart descend are believed to form the basis of dermoid cysts; the primordium of the bronchi and lungs, of bronchogenic cysts Other cysts arise from the pericardium and the thymus. Dermoids are often observed in the anterior part of the superior mediastinum, but they also occur near the hilum or in locations intimately associated with the heart and great blood vessels, sharing the latter characteristic with bronchogenic cysts The angiocardiographic observations in cases of mediastinal tumor may be discussed to advantage by considering the changes in the cardiovascular system that occur as the result of either a benign or a malignant mediastinal tumor.

*Classification of 65 Proved Mediastinal Tumors**

I	Cysts	
	1 Dermoid	7
	2 Bronchogenic (endothelial)	8
	3 Pericardial (mesodermal)	4
	4 Thymic	2
	5 Teratoma	2
	Total	23
II	Connective Tissue Tumors	
	1 Lipoma	1
	2 Lipomyxosarcoma	1
	3 Fibrosarcoma	5
	4 Fibrosarcoma of the heart	1
	Total	8
III	Lymphomatous Tumors	
	1 Hodgkin's Disease	19
	2 Reticular Cell Sarcoma	2
	3 Spindel Cell Sarcoma	1
	4 Leukemia	1
	Total	23
IV	Mediastinal Endothelioma	
	1 Hemangiopericytoma	1
	Total	1
V	Thymoma	
	1 Benign	5
	2 Malignant	4
	Total	9
VI	Carcinoma	1
	Total	1
	Grand total	65

*Modified from that of Andrus and Heuer[4]

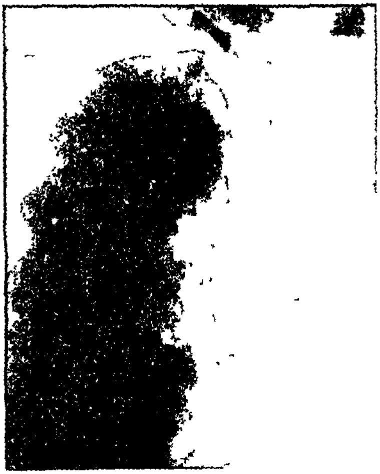

Fig 4—Lymphoma The patient was a 57-year-old man with clinical evidence of obstruction of the superior vena cava conventional films revealed lobulated widening of the superior mediastinum The
ows
a large polypoid
the
superior vena
of
the lesion An
ir-
radiation

Benign Mediastinal Tumors—Benign cysts commonly occurring in the mediastinum include dermoid, bronchogenic, pericardial and thymic cysts. Dermoids[7] usually occur in the anterior mediastinal compartment (6 of our 7 cases; the other was in the middle portion of the mediastinum). Bronchogenic cysts are often related to the hilar areas but may also occur in the superior mediastinum, between the superior vena cava and the trachea. Pericardial cysts[8] are usually contiguous to the pericardium and the heart and produce shadows on the conventional roentgenogram that simulate cardiac enlargement or pericardial effusion. Our 2 thymic cysts were located in the left hilum A tumor in this regi

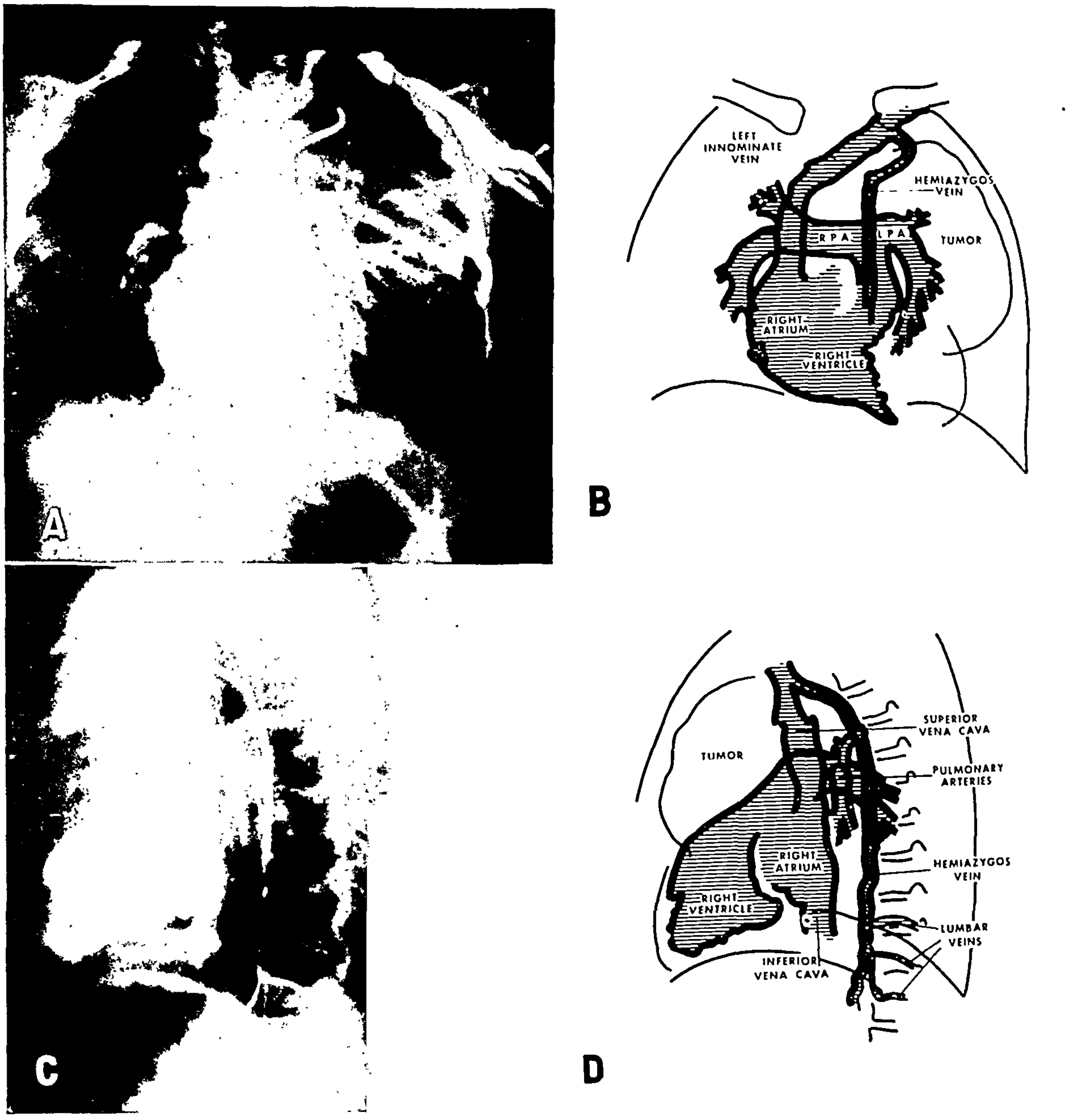

Fig. 5.—Malignant thymoma. The patient was a boy aged 6½ years. A well circumscribed mass was seen to project from the left hilum on the thoracic roentgenogram. *A*, frontal angiocardiogram at two and a half seconds. *B*, tracing of *A*. *C*, lateral angiocardiogram at two and a half seconds. *D*, tracing of *C*. The pulmonary artery has been displaced posteriorly and downward. Although no block of the superior vena cava is shown, opacification of the hemiazygos vein is evident. Films of the left side of the heart (not included in this article) showed posterior displacement of the aorta by the mass. At operation a malignant thymoma, apparently encapsulated, was removed. The patient is living and well after two years.

mistaken for enlargement of the pulmonary artery. Although any of the aforementioned types of cyst, as well as mediastinal lipomas and benign thymomas, may, by virtue of their space-occupying nature, cause displacement of adjacent blood vessels and the heart, they rarely produce constriction or actual invasion of blood vessels. All are usually localized and encapsulated, a fact often suggested by the angiocardiogram (Fig. 1).

Malignant Mediastinal Tumors.—In this category are included teratoma, lipomyxosarcoma, fibrosarcoma, the lymphomas, mediastinal endothelioma, malignant thymoma and finally carcinoma of the mediastinum (see table). As with other types of malignant tumor, angiocardiographic study reveals vascular deformities varying from displacement through stenosis and occlusion to invasion of the neighboring cardiovascular structures. Not all malignant mediastinal tumors, however, produce vascular deformity. Circumscribed although invasive masses can cause simple displacement such as is usually produced by benign lesions.

Teratoma: Two teratomas were studied angiocardiographically, and in both instances there was striking and significant vascular deformity. The first patient, a 23-year-old man, had a tumor in the left hilum that overlapped the left cardiac border. The signs of pulmonary stenosis were present, and angiocardiographic study showed marked deformity of the left pulmonary artery, which was involved by the tumor. At operation, removal of the tumor was not possible. The other patient, a 22-year-old woman, presented evidence of obstruction of the superior vena cava caused by a large tumor adjacent to the right heart border. Angiocardiographic examination revealed the site of the superior vena cava obstruction and the resultant collateral circulation (Fig. 2). Exploratory operation in this instance confirmed the inoperability of the teratoma.[2]

Lipomyxosarcoma: A unique case of lipomyxosarcoma studied angiocardiographically is reported in detail elsewhere.[2] The patient, a 29-year-old woman, was asymptomatic, roentgen examination showed a huge mediastinal tumor.

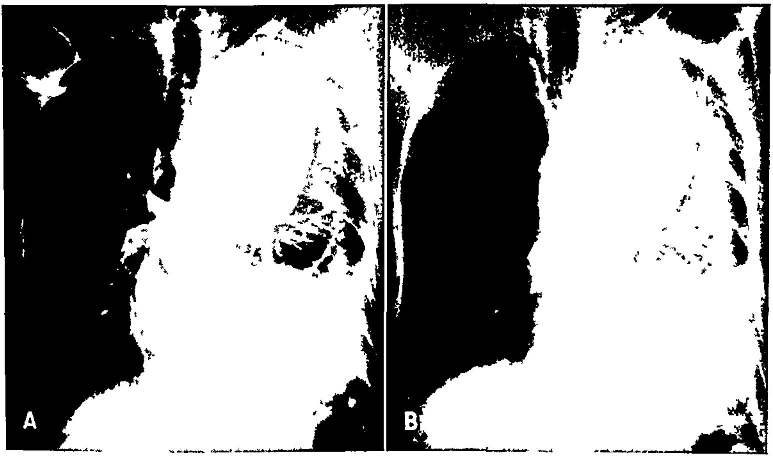

Fig. 6—Primary carcinoma of the mediastinum. The patient was a man aged 58 with a history of coughing, dyspnea, fever, night sweats and pain in the left side of the chest. C[illegible] thoracic films revealed a mass in the left superior mediastinal area. *A*, [illegible] at three seconds. The mass projects from the mediastinum, displacing and [illegible] al arteries to the left upper lobe. *B*, frontal angiocardiogram at nine se[illegible] is clearly shown, ruling out aneurysm An inoperable tumor was observed [illegible] diagnosis was primary carcinoma of the mediastinum.

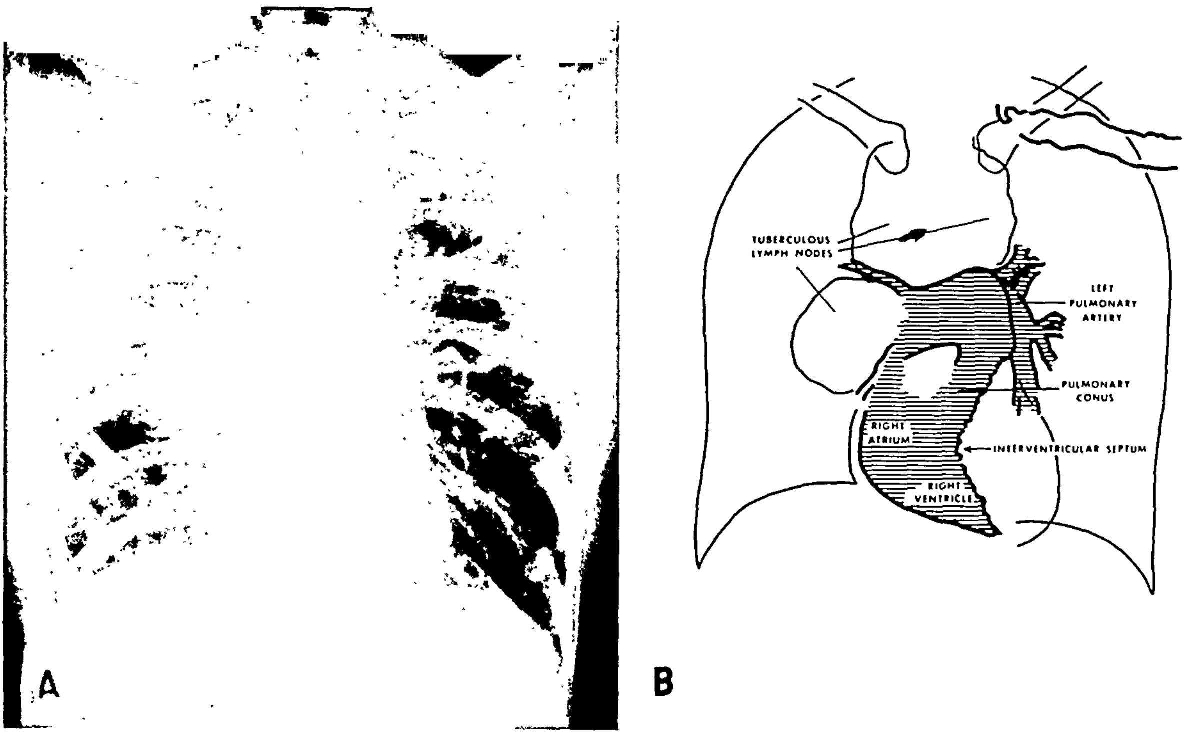

Fig. 7.—Tuberculous mediastinal lymphadenopathy. The patient was a 20-year-old Negro with massive hilar and mediastinal tuberculosis and a positive reaction to the sputum test from the tuberculous infiltration in the right upper lobe. *A*, frontal angiocardiogram at four seconds. A large node in the right hilum has caused stenosis of the descending branch of the right pulmonary artery. These conditions are not specific and may have been caused by a variety of neoplastic or granulomatous lesions. *(From Dotter, C. T., and Steinberg, I.: Angiocardiography. New York: Paul B. Hoeber, Inc., 1951.)*

Angiocardiographic examination showed the superior vena cava to be intact but markedly displaced. The right pulmonary artery was narrowed and displaced downward. Here, too, the intimate relation of the vessels allowed only partial removal of the tumor.

Fibrosarcoma: Fibrosarcoma of the mediastinum was encountered in 6 instances, occurring once in the heart. In each case, angiocardiographic examination showed serious vascular deformities (Fig. 3), and in only case was operative removal possible. In the last-mentioned case (not illustrated) the tumor was located in the anterior superior mediastinum and caused displacement of the right innominate vein and the superior vena cava. At operation it was well encapsulated. Radiation therapy was given postoperatively. Two years after operation the patient remains well.

Lymphomas: In this group of cases, as was to be expected because of the high grade of malignancy, every type of mediastinal vascular deformity was encountered. One patient with leukemia, 1 with reticulum cell sarcoma and 1 with early Hodgkin's disease showed no vascular abnormality. Angiocardiographic study was of value in delineating the tumor masses. In the remaining cases, partial or complete occlusion of the mediastinal veins was the rule. Polypoid invasion of the superior vena cava was also observed (Fig. 4). In 1 patient studied before and after irradiation the angiocardiogram showed relief of obstruction of the superior vena cava and disappearance of the associated collateral circulation. Involvement of the pericardium was noted in 2 instances and confirmed at operation.

Mediastinal Endothelioma: In 1 patient a hemangiopericytoma occurred in the middle portion of the mediastinum, adjacent to the heart. The angiocardiogram showed that the mass had caused anterior displacement of the posterior cardiac chambers. At operation a well encapsulated lesion was easily shelled out. Two years after the operation the patient remains well.

Malignant Thymoma: Thymomas are often highly malignant. In 5 out of 6 cases in this series the angiocardiogram showed widespread vascular deformity consisting of displacement, stenosis and obstruction of mediastinal veins (Fig. 5) or pericardial invasion. In 1 case, in which angiocardiographic study showed only displacement of the superior vena cava, the tumor was found to be encapsulated and was excised. Irradiation was administered as a precautionary measure, and two years afterward the patient remains well.

Carcinoma: This tumor, which occurs rarely in the mediastinum, should be diagnosed only after a complete autopsy, for mediastinal metastases may cause similar clinical, operative and histologic abnormalities. In our single case the patient, managed 59, had had dyspnea and pain in the left side of the chest for one month. Physical and roentgen examination revealed fluid in the left side of the chest and 1,600 cc. of bloody pleural fluid was aspirated. Angiocardiograms (Fig. 6) showed a huge tumor of the anterior superior mediastinum compressing the ascending branch of the left pulmonary artery. Exploratory thoracotomy indicated that the tumor was inoperable. A biopsy specimen was interpreted as showing an embryonal carcinoma of the mediastinum. This was confirmed by autopsy four months later.

SUMMARY AND CONCLUSIONS

The angiocardiographic observations in 65 proved cases of mediastinal tumor are reviewed. As a rule, benign mediastinal tumors merely displace cardiovascular structures, whereas malignant tumors tend to produce stenosis, occlusion or invasion. Such conditions may occasionally be the result of non-neoplastic lesions (Fig. 7). Preoperative angiocardiographic study is invaluable, for it not only permits the surgeon to plan the surgical attack but gives considerable information with regard to the operability of the tumor. The information revealed by angiocardiographic examination is of sufficient importance to allow the prediction that this type of investigation will ultimately become a routine part of the preoperative study of patients with mediastinal tumors.

RÉSUMÉ ET CONCLUSIONS

L'observation des images angio-cardiographiques dans 65 cas de tumeurs médiastinal es dont le diagnostic est prouvé. Règle générale, les tumeurs médiastinales bénignes ne déplacent que très peu l'arbre cardiovasculaire tandis que les tumeurs malignes ont tendance à causer une sténose et occlusion et à envahir. Occasionnellement, detelles conditions ne sont pas dûes à des lésions néoplasiques (Fig. 7). L'étude angiographique préopératoire a une valeur incalculable. Elle donne au chirurgien son plan d'attaque et évalue l'operabilité dela tumeur. Les in formations que nous donnent les angiocardiographies sont assez importantes que l'on peut prédire qu'elles deviendront un examen de routine chez les malades porturs d'une tumeur médiastinale.

RESUMEN Y CONCLUSIONES

Se revisan las observaciones angiocardiográficas en 65 casos comprobados de tumor mediastinal. De ordinario, los tumores mediastinales benignos sólo dislocan las estructuras cardiovasculares, mientras los tumores malignos tienden a producir estenosis, oclusión o invasión. Dichas condciones pueden resultar ocasionalmente de lesiones no neoplásicas (Fig. 7). El estudio angiocardiográfico preoperatorio es inestimable, porque no sólo permite al cirujano idear el ataque quirúrgico, sino que proporciona información considerable respecto a la

operabilidad del tumor. La información obtenida por el examen angiocardiográfico es lo bastante importante para permitir predecir, que este tipo de investigación se convertirá al fin en parte rutinaria del estudio preoperatorio de pacientes con tumores mediastinales.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

Es wird ein Ueberblick ueber angiokardiographische Beobachtungen an 65 bestaetigten Faellen on Geschwuelsten des Mediastinums gegeben. Waehrend gutartige Mediastinaltumorn in der Regel Herz und Gefaesse lediglich verdraengen, fuehren boesartige Geschwuelste eher zur Bildung von Verengungen oder Verschluessen oder zum Einbruch in das Herzgefaesssystem. Gelegentich koennen derartige Zustaende auch das Resultat nicht neoplastischer Erkrankung sein (Abb. 7). Die praeoperative angiokardiographische Untersuchung ist von unschaetzbarem Wert, weil sie nicht nur dem Chirurgen fuer die Planung des operativen Vorgehens wichtige Kenntnisse ermittelt, sondern auch ueber die Operabilitaet der Geschwuelste Auskunft gibt. Die durch angiokardiographische Untersuchung gewonnenen Informationen sind bedeutend genug, um die Voraussage zu gestatten, dass diese Methode eines Tages einen selbstverstaendlichen Bestandteil der praeoperativen Diagnostik der Mediastinaltumoren darstellen wird.

SUMÁRIO E CONCLUSÒES

São revistos 65 sasos provados de tumôr do mediastino. Em geral os tumôres benignos do mediastino somente deslocam estrutúras cardiovasculares emquanto os tumôres malignos tendem a produzir estenóse, oclusão ou invasão. Fais condições podem ocasionalmente ser o resultado de lesões não neoplasticas (Fig. 7). O estudo angiocardiografico preoperatorio é inestimavel proque não so permite ao cirurgião planejar o ataque cirurgico como dá consideravel informação sobre a operabilidade do tumôr. A informação revelada pelo exame angiocardiografico é de suficiente importancia para que se antecipe a predição de que esse tiop de exame será dentro em breve incorporado á rotina do estudo pre-operatório de pacientes com tumôres mediastinicos.

CONCLUSIONI RIASSUNTIVE

Vengono passati in rassegna i dati angiocardiografici di 65 casi accertati di tumore mediastinico. Di regola i tumori mediastinici benigni determinano un semplice spostamento degli organi intratoracici, mentre quelli maligni hanno tendenza a produrre stenosi, ostruzione o invasione degli organi contigui. Tali condizioni, tuttavia, possono essere causate anche da affezioni non neoplastiche. (Fig. 7).

Lo studio angiocardiografico preoperatorio è di grande aiuto non solo perchè consente di stabilire un programma di intervento, ma anche perchè informa sulla operabilitâ del tumore.

Questi elementi fanno della angiocardiografia una ricerca di importanza tale da far pensare che essa entrerà nella prassi dello studio preoperatorio dei tumori mediastinici.

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A Critical Appraisal of the Extension of Radical Operation for Rectal Cancer

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DURING the past months we have been impressed by the increasing interest accorded to extensive radical abdominopelvic operations for the eradication of invasive cancer of the rectum. Emphasis is being placed upon the extirpation of all pelvic organs evidencing involvement, including the bladder. Culminating these efforts has been the evolution of a procedure termed pelvic exenteration, or pelvic eviscerectomy, in which the pelvis is stripped of all involved organs, diseased lymphatics and veins, including potentially involved lymph nodes. Unquestionably this procedure is extremely radical and carries increased mortality and morbidity rates. Some of the patients are left surgical invalids, yet are fully cognizant that if we are to limit the ravages of the disease such surgical measures are justified. Indeed, there is far more justification for pelvic exenteration in the presence of rectal carcinoma than there is for exenteration in cancer of the cervix or bladder. Our purpose is neither to condemn nor to praise this approach. The matter is still in an experimental stage, and it is only after sufficiently long survival rates are available for analysis that we can evaluate its desirability. Our purpose here is rather to direct attention to the often neglected middle ground, that commonly encountered category of invasive rectal cancer which demands a more radical attack than is inherent in the commonly standardized Miles operation, anterior resection or "pull through" procedure.

A short time ago we were privileged to witness a recently prepared film from one of the larger surgical clinics which depicted the steps in a Miles abdominoperineal excision as performed in that clinic. To proffer an understatement, we were considerably disappointed. All too plainly presented was the failure of the surgeon to take advantage of his opportunity to extend the dissection to include the important lymph nodes of the mesocolon at the origin of the inferior mesenteric artery, or "axilla of the rectum", as it has been termed. The preaortic area was untouched, and the lateral pelvic areas were inadequately cleared of levator and lymphatic tissues. Such an operation is perhaps justified when the surgeon is dealing with a carcinoma *in situ* or for palliation, but its employment for the usual rectal cancer is to be condemned. One is not required to visit many hospital operating rooms to observe many similar instances.

In seeking to comprehend these limitations which are so widely adhered to in the popular abdominoperineal excision, two factors are evident. One is the all too human failing of becoming a slave to habit. A technic is learned, and it is seldom varied. The rectum is approached much like the appendix or the gallbladder, with the unconscious or conscious attitude that the disease is limited to the organ or contained in it and that all one has to do is to remove it. Other structures are not disturbed unless they pre-

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From the Departments of Proctology and Urology, Temple University.

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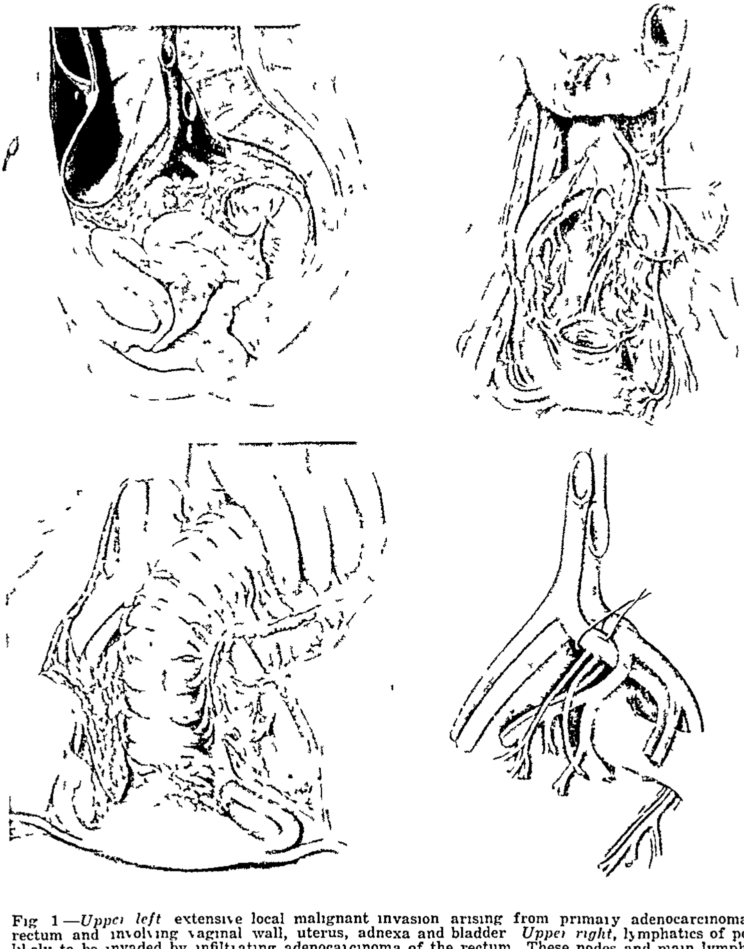

Fig 1—*Upper left* extensive local malignant invasion arising from primary adenocarcinoma of rectum and involving vaginal wall, uterus, adnexa and bladder *Upper right*, lymphatics of pelvis likely to be invaded by infiltrating adenocarcinoma of the rectum These nodes and main lymphatic trunks are excised in the extended abdominoperineal excision *Lower left* inferior mesenteric artery divided at its origin from aorta and large vessels cleared of lymphatic and areolar tissues All structures to be excised are reflected medially from pelvic wall as far anteriorly as exit of external iliac vessels *Lower right* hypogastric arteries ligated in continuity to provide control of hemorrhage in the pelvic and perineal dissections Site of ligation is usually distal to origin of posterior gluteal artery

vent extirpation of the rectum.

The other and more important factor is ignorance on the part of the surgeon as to just how far he can safely extend his operation. It is to this subject that we would devote the remainder of our paper, and it is our purpose to point out the many simple and effective measures that can be utilized, as well as to dwell upon the several important safeguards available to the surgeon who contemplates radical eradication of rectal cancer.

Selection of an Operative Procedure.—Extended radical operations for cancer of the rectum are not necessarily limited to the abdominoperineal approach. For intraperitoneal rectal cancer the anterior resection can be elected. In case of obstruction a preliminary colostomy is advisable. For lesions of the upper part of the rectum it is possible to preserve the sphincters provided the entire rectum, the levators and the endopelvic fascia are extirpated. In both of these procedures one must be assured that the growth has not invaded beyond the rectum. The procedure of choice for invasive rectal carcinoma is extended abdominoperineal excision with permanent abdominal colostomy.

Basic Technical Approach with Excision of the Lymphatics.—In any curative approach for carcinoma of the rectum the regional lymphatics must be removed. Most important are those of the upward drainage system, since these collect lymph from the entire upper part of the rectum, most of the midrectum and a large portion of the lower rectum. Not only are the entire lymph nodes of the mesorectum and the mesosigmoid eradicated, but the preaortic nodes from the duodenum to the bifurcation of the aorta are excised. This is done by ligating and dividing the inferior mesenteric artery at its origin and incising the mesocolon outward to the marginal artery. The incision can be extended downward along the marginal vessels to the point chosen for colostomy or anastomosis. The aorta is then easily stripped of areolar, fascial and lymphatic tissues. The bifurcation of the aorta is cleared of lymph nodes.

It is with little difficulty that the lateral lymphatic drainage areas are extirpated. Incisions are extended along each external iliac artery to the inguinal ligament. The tissues overlying these vessels are reflected medially, and the dissection is continued downward with thorough clearing of the common iliac bifurcations and hypogastric vessels. The obturator nodes and the nodes of the middle hemorrhoidal arteries are excised. This can be facilitated by extending the incisions from the terminations of the external iliac vessels downward, laterally in relation to the bladder, to the rectovesical space. The intervening lateral tissues are reflected downward and medially. The sacrum and lateral sacral areas are stripped of lymphatics. For cancer that invades the anal canal or the perianal areas, a bilateral inguinal node dissection must be elected shortly after the definitive surgical treatment, before invasion has occurred.

Excision of the Uterus and Adnexa.—In cases in which the rectal carcinoma has invaded the vagina, the uterus and adnexa must be extirpated as well as the vagina. These organs are also removed when the uterus itself is the only structure attacked.

The ovarian vessels are ligated as they course over the brim of the pelvis. The suspensory ligaments of the ovaries are easily reflected medially after the preliminary incisions are made overlying the external iliac vessels as described. The round ligaments are amputated as far laterally as possible. The broad ligament is reflected medially as the dissection proceeds downward. The uterine vessels are ligated and divided at their origins after both ureters have been exposed. Anteriorly, the bladder is separated from the vagina. No effort is made at this time to divide the vagina. The dissection is completed after the uterus and adnexa have been mobilized. These organs are not separated from any attachments that may exist between them and the rectum, as

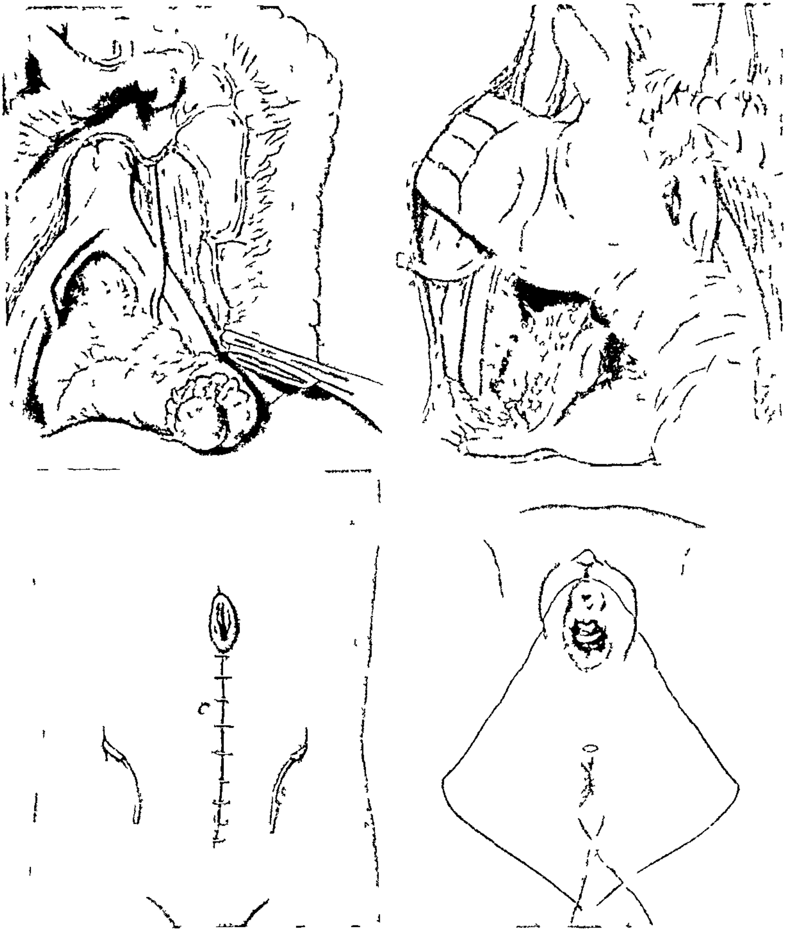

Fig 2—*Upper left* descending colon divided and proximal segment brought through upper pole of incision to form a permanent colostomy Distal segment placed in pelvis for removal from below No peritoneal floor is reconstructed *Upper right* each ureter divided as near bladder as possible Latex rubber catheters are inserted as far as kidney pelvises Tunnels are then constructed by blunt dissection under parietal peritoneal wall so that ureters course in a retroperitoneal position to their external openings through stab wounds in anterior abdominal wall at previously marked locations *Lower left* positions of permanent colostomy and ureteral stomas A rub r waterproof cup is fitted over each stoma and drainage tubes convey urine to a re stra , to patient's leg *Lower right* incision for perineal phase in female extends to e ti later ond tip of coccyx poste

the entire mass of tissue is to be delivered from below in the perineal phase.

During the perineal phase of the procedure the vagina is mobilized laterally and anteriorly above the urethra. It is separated from the bladder by careful dissection until the dissection made from the abdominal approach is reached. After division of the levators at their origins, the rectum with its ischiorectal fat, sphincters, levators, and associated tissues is delivered from below, including the attached vagina, uterus and adnexa, as well as a liberal portion of the sigmoid and all of the rectal and node-bearing sigmoidal mesocolon.

Such a procedure is not difficult and conforms to an important principle in cancer surgery, that of removing the growth in block, including immediately contiguous normal tissues.

Excision of the Prostate and Seminal Vesicles.—In the usual Miles operation the seminal vesicles are reflected anteriorly and are preserved. When cancer of the rectum has invaded this area these structures must be removed. They are not separated from the rectum, but dissection proceeds downward, separating them from the bladder.

In the perineal phase the prostate can be carefully dissected from the urethra and the base of the bladder and removed in block with the seminal vesicles and the diseased bowel.

Excision of the Bladder.—When the carcinoma has invaded the bladder, it is often possible to excise the portion of bladder wall involved without altering the course of the ureters. In such cases the vesical defect is repaired by means of two rows of sutures of fine chromic catgut in the mucosa and muscularis. If peritoneum is available it can be included in the second layer of sutures.

If the invasion is at all extensive, the bladder must be sacrificed. An incision is made above the bladder, connecting the incisions previously established overlying the external iliac vessels. It is a simple matter to reflect the bladder with its peritoneum downward and posteriorly. By blunt dissection it can be easily separated from its anterior and lateral attachments. The ligamentous attachment between the base of the bladder and the symphysis pubis can be divided from the perineal approach. The vesical vessels are ligated and divided at their origins. No attempt is made to separate the bladder from its attachments to the rectum or to the uterus and adnexa in the female. These structures are to be removed in block from below.

The perineal approach differs but little from that described except that in the female the anterior limit of the incision is made anterior to the urethra to permit excision of that structure with the bladder. The dissection is carried upward, separating the base of the bladder from the pubis, so that all of the mobilized pelvic organs can be excised in block.

In the male the urethra must be divided as the anterior portion of the perineal incision is deepened. The dissection then proceeds upward, with separation of the bladder from the pubis.

Transplantation of the Ureters.—It is not our purpose to elaborate on this subject. Many excellent technics are available for anastomosing the ureters to various portions of the large or small bowel. In our experience, transplantation to the skin is the least hazardous. This can be performed by establishing stab wounds in both lower abdominal quadrants. The ureters are carefully mobilized, but they are not stripped of their blood supply. Each ureter is placed in a retroperitoneal position by constructing tunnels which extend laterally and anteriorly beneath the parietal peritoneum to the stab wounds. The ureters are brought through the stab wounds and must project several centimeters above the cutaneous surface. Latex catheters of the whistle-tip variety are inserted into the ureters, each catheter being the largest size that the ureter will tolerate.

The ureters can be fixed to the skin by single sutures of fine silk.

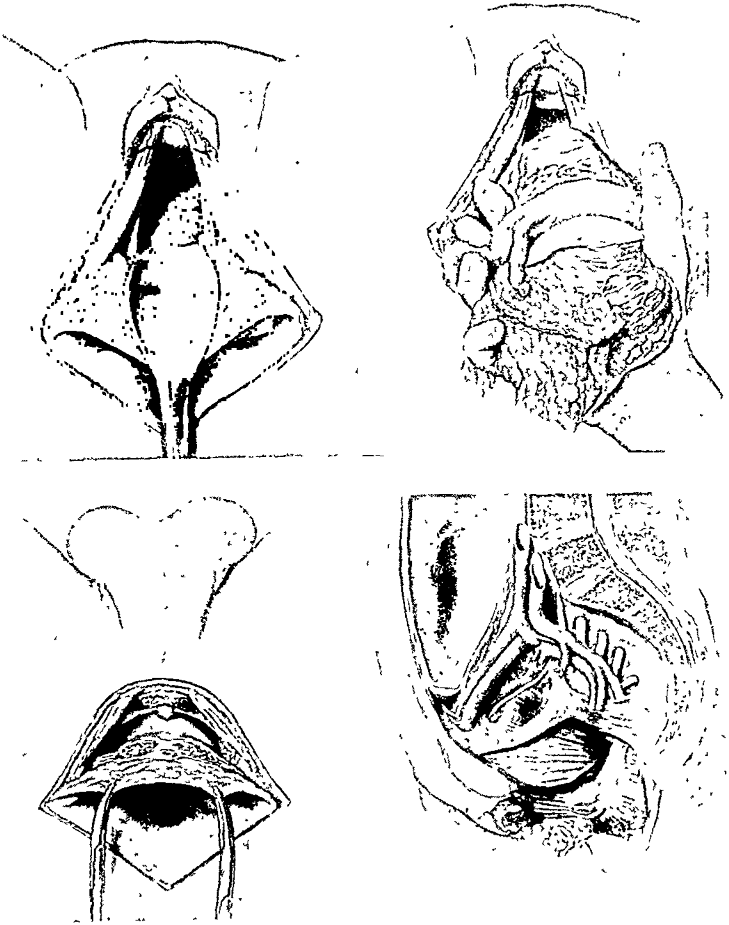

Fig. 3.—*Upper left,* incision deepened. Bladder can be seen as it is separated from the symphysis pubis. In the female the urethra is removed in block with the specimen. *Upper right,* after division of levator muscles at their origins, entire specimen, consisting of anus, rectum, ischiorectal fat, levators, vagina, urethra, uterus, adnexa, bladder and associated lymphatics, veins, and other tissues is delivered from below. *Lower left,* incision in male begins over anterior perineum and extends laterally and posteriorly as in female. Urethra is divided in its posterior division distal to prostate gland. Bladder is freed from symphysis and dissection is continued as in female. *Lower right,* pelvis cleared of viscera, lymphatics and many of the large potentially involved veins. The cavity which results from this excision is packed by a large square of rubber dam into which 2-inch vaginal packing is inserted from below. Pack is hemostatic and prevents small intestine from entering pelvis. After ten days pack is slowly delivered from below so that it is all out by the fourteenth postoperative day.

Partial Excision of the Ureters.—It is often necessary to excise a portion of ureter involved by carcinoma. Often the defect can be repaired by end-to-end ureterostomy or by reimplanting the ureter into the bladder. When a large segment has been removed, skin ureterostomy or transplantation of the ureter to the large or small intestine is advisable. When the other kidney and ureter function normally and it has been necessary to remove a large portion of the diseased ureter, the upper segment can be ligated and divided as near the kidney as possible. Generally, the kidney will cease to function and become atrophic. In some instances it may be necessary to remove that kidney later.

Excision of Pelvic Veins.—The work of Sunderland and others has indicated that the veins of the rectum may often become involved by carcinoma. Usually these are eradicated in dissection of the lymphatics as outlined. However, in certain instances of invasive rectal carcinoma there may be involvement of the extrarectal pelvic veins. Evidence of such invasion is obtained by palpating the hypogastric and iliac veins and their tributaries. Such veins can be excised without difficulty, and it will often be advantageous to remove the hypogastric veins and their tributaries for a more radical excision of the lateral lymphatics and lymph nodes.

Excision of Viscera Other than Pelvic Organs.—Not uncommonly the small intestine is found to be involved by the rectal growth. Involved segments of bowel must not be separated from their attachments to the rectum. The procedure of choice is to divide the small bowel several inches proximal and distal to the attached segment. The two ends are then approximated in an end-to-end anastomosis. The diseased segment is delivered from below with the rectum, in block.

The omentum must likewise be widely excised and not separated at the point where it has become involved.

It is not our task here to deal with the excision of distant metastases other than those in the pelvis or the lower part of the abdomen. We have had no experience in removing portions of the liver, nor do we advocate such attempts.

Safeguards.—Hemorrhage: One of the great fears harbored by a majority of surgeons is the fear that severe bleeding or uncontrollable hemorrhage may attend their efforts at radical extirpation of the invasive rectal carcinoma. Such hemorrhages have occurred, and the danger is indeed a real one, but with the knowledge of a few principles and safeguards much of this difficulty can be eliminated.

An aid in the prevention of hemorrhage is early ligation and division of the inferior mesenteric artery at its origin. The vein is likewise ligated and divided.

A further safeguard is ligation but not division of the hypogastric vessels distal to the origin of the superior gluteal artery. This can be performed early in the dissection and greatly aids in curtailing hemorrhage from the vesical, middle hemorrhoidal, uterine or internal pudendal arteries.

A common cause of hemorrhage is damage to one of the large veins. When this has occurred it is often possible to occlude the perforation by means of a hemostat and apply a ligature to the site, especially if the defect is a small one. Attempts at suturing often result in more damage and further hemorrhage. In our experience, ligation of the vessel above and below the site of injury is desirable, however, and pressure will usually arrest the bleeding promptly. We recently applied a portion of gelfoam to a perforation in the vena cava, and with pressure the bleeding was permanently controlled. The use of hot moist pressure packs for low pelvic bleeding is of greater value than the uncertain, ineffectual and traumatic application of numbers of hemostats.

After the perineal phase has been completed the insertion of packing into the pelvis will arrest any oozing or hemorrhaging not readily controlled by other means.

Data on Radical Surgical Procedures for Rectal Cancer

	Number	Mortality
Cystectomy with excision of prostate, seminal vesicles, urethra, veins, lymph nodes, transplantation of ureters into skin	2	0
Cystectomy with prostatectomy, excision of seminal vesicles, urethra, veins, lymph nodes, transplantation of ureters to colon	1	1
Cystectomy with panhysterectomy, vaginectomy and excision of veins, lymph nodes, transplantation of ureters to skin	1	0
Cystectomy, vaginectomy, transplantation of ureters to abdominal wall	1	0
Cystectomy (partial) with right ureterectomy	1	0
Cystectomy (partial)	8	0
Ureterectomy (left) and hemicolectomy	1	1
Ureterectomy (partial)	7	0
Prostatectomy (complete or partial), excision of seminal vesicles, partial excision of urethra	7	0
Prostatectomy (complete or partial), excision of seminal vesicles	14	1
Subtotal sacral excision with coccygectomy, prostatectomy and excision of seminal vesicles	3	0
Panhysterectomy, partial ureterectomy, transplantation of one ureter into sigmoid colon, reimplantation of other ureter to bladder	1	0
Panhysterectomy with excision of adnexa, posterior vaginal excision	8	0
Panhysterectomy with excision of adnexa	20	0
Bilateral salpingoophorectomy	4	0
Vaginectomy, partial, with wide excision of posterior vaginal wall	8	0
Bilateral inguinal node dissection following extirpation of uterus, adnexa and posterior vaginal wall	2	0
Bilateral inguinal node dissection following partial prostatectomy, partial excision of urethra and removal of seminal vesicles	1	0
Bilateral inguinal node dissection	5	0
Subtotal small intestine resection	10	0
Partial excision anterior abdominal wall	3	0
Appendectomy	2	0
Total	110	(2.72%)
Abdominopelvic lymph node dissection	38	0
Ligation and division of inferior mesenteric artery at aortic origin	36	0

Adequate whole blood must be on hand for all of these procedures, but even with complete pelvic eviscerectomy more than 3,000 cc. is seldom necessary.

Blood Supply. The fear is often expressed that ligating the inferior mesenteric artery at its origin will result in ischemia of the portion of sigmoid colon chosen for anastomosis or colostomy. This is not the case. In our experience this ligation has been performed successfully in 37 cases without complication. The marginal artery derived from the middle colic artery is quite adequate. Care must be taken, however, not to destroy the arterial arcades to the segment to be preserved. These arcades can be easily visualized by transillumination. They need not be interrupted for complete removal of the mesocolic lymph nodes, which are along the inferior mesenteric artery, the superior hemorrhoidal artery and the origins of the left colic and sigmoidal arteries.

A safeguard in ligation and division of the inferior mesenteric artery is to perform this step early and then observe the bowel during the remainder of the abdominal phase. Should it show discoloration, it is an easy matter to liberate the splenic flexure and bring more normal bowel down for colostomy or anastomosis. We have not as yet had to do this after inferior mesenteric ligations of this kind.

Peritonealization. Many surgeons have an ungrounded aversion to leaving any uncovered or "raw" surfaces within the abdominal or pelvic cavities. Actually, the deperitonealized surfaces are of no significance. Healing is prompt, and the surfaces soon become epithelized without the formation of adhesions. Indeed, this complication is much more commonly the result of closing these defects with catgut, a material which produces sufficient inflammatory reaction to invite adhesions.

Closure of the Pelvic Floor: In these extended excisions for cancer of the rectum the peritoneum is widely removed, and there is not enough remaining to reconstruct a satisfactory pelvic floor. This has been of no importance in our series of cases. A large portion of rubber dam is introduced from below to fill the true pelvis. This is packed with 2-inch vaginal gauze. In from ten days to two weeks epithelization over the upper surface of the rubber dam in contact with the small intestine and omentum (where possible) will have been completed, and the packing can be slowly withdrawn. After the removal of the rubber dam the pelvic cavity is inspected, and it will rarely be necessary to replace the pack.

SUMMARY AND CONCLUSIONS

Any approach toward extended extirpation of invasive cancer of the rectum should conform to certain well established principles, most of which are known to surgeons seeking to eradicate cancer from any part of the body. These principles may be summarized as follows:

1. The operative approach must be so planned as to excise the growth with its extensions and all involved or potentially involved lymphatics and lymph nodes, *en bloc*.
2. The main venous drainage channels leading from the structures to be excised should be ligated and divided whenever possible before the involved tissues are manipulated. This is achieved to a large extent by initially severing the inferior mesenteric vessels at the base of the mesocolon before beginning the pelvic dissection. As the deeper pelvic vessels are approached they are divided.
3. Control of hemorrhage is aided by early ligation and division of the inferior mesenteric artery. The hypogastric arteries are ligated distal to the origin of the superior gluteal arteries. Other pelvic arterial vessels are ligated as they are approached. Troublesome venous bleeding can easily be controlled by pressure.
4. The surgeon must center his approach on radical removal of the cancer. Concern over preservation of the peritoneum for possible reconstruction of a pelvic floor is of secondary importance and should not limit the extent of dissection. Peritonealization is not an important factor, and an artificial floor can satisfactorily be established by means of a large pack introduced from below.
5. Careful planning must precede and follow extensive operations for carcinoma. Most important is the presence of an adequate supply of whole blood for infusions before, during and after the operative procedure.
6. The simplest and least hazardous method of dealing with the ureters is to implant them in the anterior abdominal wall. In addition, such a procedure prevents the loss of valuable operating time so often dissipated in performing ureterocolic anastomoses or other types of enteroureterostomies. This is significant when every possible minute is to be utilized in eradicating the extensions of the lesion and the abdominopelvic lymph nodes.

RÉSUMÉ ET CONCLUSIONS

Il existe certains principes que tout chirurgien doit suivre lorsqu'il veut extirper un cancer dans n'importe quelle partie du corps.

On peut les résumer de la façon suivante:

1. La méthode à suivre doit permettre l'extirpation en bloc de la tumeur avec ses réactions de voisinage—les lymphatiques et leurs ganglions.
2. Avant de manipuler les principaux canaux veineux qui partent des organes cont on doitfaire l'exérèse, il faut les diviser et les ligaturer. Par exemple, les vaisseaux mésentériques inférieurs à la base du mèso doivent être ligaturés avant la dissection du bassin. Si l'on rencontre des vaisseaux plusprofonds dan la même région, il faut aussi les ligaturer.
3. Pour contrôler l'hémorragie, un-

eligature precoce de l'artere mesenterique inferieure Les arteres hypogastriques sont ligaturees a l'origine des arteres superieures—de même que toute artere du bassin L'hemorragie veineuse sera arrêtee par une compression manuelle

4 Le chirurgien doit envisager l'extirpation complete du cancer Il ne faut pas conserver inutilement le peritoine dans un but de peritonisation secondaire Cette peritonisation secondaire peut bien se faire a l'aide d'un paquetage

5 Un plan precis doit preceder et suivre toute grave operation pour cancer Il ne faut jamais oublier de se procurer et detenir a sa disposition une quantite suffisante de sang que l'on pourra infuser durant et apres l'operation

6 La façon la plus simple et la moins hasardeuse de menager les ureteres est de les implanter dans la paroi abdominale anterieure De plus, cette methode em*pêche une perte de temps precieuse, que* l'on perd necessairement si l'on pratique une anastomose de ces ureteres avec l'intestin Ceciprend de l'importance quand on doit employer tout son temps a l'extirpation de la tumeur et des vaisseaux lymphatiques avec leurs ganglions

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

Jedes chirurgische Verfahren, das eine umfangreiche Entfernung eines infiltrierend wachsenden Mastdarmkrebses zum Ziele hat muss gewisse allgemein anerkannte prinzipielle Voraussetzungen erfuellen die zum groessten Teil dem Chirurgen, der sich mit operativer Krebsbehandlung beschaeftigt, wohlvertraut sind *Diese Grundsaetze koennen folgender*massen zusammengefasst werden

1 Der operative Angriff muss fuer die Entfernung der Geschwulst *im ganzen* mit allen ihren Ausbreitungen und einschliesslich aller tatsaechlich oder moeglicherweise befallenen Lymphbahnen und Lymphknoten geplant werden

2 Die wichtigsten venoesen Abflusswege, *die von den zu entfernenden Ge*bilden entspringen, muessen wenn irgend moeglich unterbunden und durchtrennt werden, bevor das befallene Gebiet angetastet wird Das kann zum groessten Teil erreicht werden, indem im Anfang der Operation die unteren Mesenterialgefaesse an der Basis des Mesocolon durchschnitten werden, ehe an die Praeparierung des Beckens herangetreten wird Die tieferen Beckengefaesse werden, sowie sie waehrend des chirurgischen Vorgehns zur zur Sicht kommen, durchtrennt

3 Die Blutstillung wird durch eine fruehzeitige Unterbindung und Durchtrennung der unteren Mesenterialarterie erleichtert Die Aa hypogastricae werden distal vom Abgang der oberen Glutaealschlagader unterbunden Die uebrigen Beckenarterien werden abgebunden, sowie man an sie herankommt Unangenehme venoese Blutungen koennen leicht durch Druck kontrolliert werden

4 Der Chirurg muss seinen Plan auf radikale Entfernung des Krebses ausrichten *Die Sorge um Erhaltung des Bauch*fells zur eventuellen Wiederherstellung des Beckenbodens ist von zweitrangiger Bedeutung und darf den Umfang der Herauspraeparierung der Geschwulst nicht beeinschraenken Die Peritonealisierung ist kein wichtiger Punkt und ein kuenstlicher Beckenboden kann in befriedigender Weise mit Hilfe eines von *unten eingefuehrten grossen* Tampons gebildet werden

Umsichtiges Planen vor und nach ausgedehnten Krebsoperationen ist notwendig Das Vorhandensein eines ausreichenden Vorrats von Blut fuer Infusionen vor, waehrend und nach der Operation ist von groesster Wichtigkeit

6 Das einfachste und am wenigsten gefaehrliche Verfahren zur Versorgung der Harnleiter besteht in ihrer Einpflanzung in die vordere Bauchwand Diese Methode vermeidet ueberdies den grossen Zeitverlust, der im allgemeinen mit der Anlegung von Harnleiterdickdarmfisteln oder anderen Arten von Harnleiterdarmverbindung einhergeht Wo jede Minute *zur radikalen Entfernung der Ausbreit*ung der Gesch und der Lym knoten im Ba ecken

genuetzt werden soll, ist eine solche Zeitersparnis sehr willkommen.

RESUMEN Y CONCLUSIONES

Toda vía para la extirpación extensa del cáncer rectal invasor debe ajustarse a ciertos principios bien establecidos, muchos de los cuales son conocidos por los cirujanos que tratan de erradicar cáncer de cualquier parte del cuerpo. Estos principios pueden compendiarse en la forma siguiente:

1. La vía operatoria debe proyectarse para extirpar el neoplasma con sus extensiones, comprendiendo los linfáticos comprometidos o potencialmente comprometidos, *en bloque.*
2. La red venosa principal de las estructuras debe extirparse, ligándola y seccionándola cuando sea posible antes de manejar lo comprometido. Esto se efectúa extensamente por la sección inicial de los vasos mesentéricos inferiores en la base del mesocolon, antes de comenzar la disección pélvica. Se seccionan los vasos pélvicos más profundos al ser identificados a su vez.
3. La ligadura y sección tempranas de la arteria mesentérica inferior ayuda al control de la hemorragia. Las arterias hipogástricas se ligan distalmente al origen de las arterias glúteas superiores. Otros vasos arteriales pélvicos se ligan a medida que son identificados. La hemorragia venosa puede controlarse fácilmente por presión.
4. El cirujano debe orientar su vía para lograr la extirpación radical del cáncer. La preservación del peritoneo para la posible reconstrucción del piso pélvico es de importancia secundaria y no debe limitar la extensión de la disección. La peritonización no es un factor importante, pudiéndose establecer satisfactoriamente un piso artificial mediante un gran taponamiento introducido por abajo.
5. Una preparación cuidadosa debe preceder y seguir a las operaciones extensas por carcinomas. Es de mucha importancia contar con un adecuado aprovisionamiento de sangre para transfusiones antes, durante y después de la operación.
6. El método más simple y menos azaroso respecto a los uréteres es la implantación de los mismos en la pared abdominal anterior. Además, este procedimiento previene la pérdida de valioso tiempo operatorio, disipado tan a menudo en la realización de anatomosis ureterocólicas u otros tipos de enteroureterostomías. Esto es significativo cuando cada minuto debe utilizarse en erradicar las extensiones de la lesión y las linfoglándulas abdóminopélvicas.

CONCLUSIONI RIASSUNTIVE

Ogni intervento che miri alla estirpazione radicale di un cancro del retto a tendenza invasiva deve uniformarsi a certi principi ben stabiliti, la maggior parte dei quali sono familiari ad ogni chirurgo che cerchi di asportare radicalmente un cancro da qualsiasi regione del corpo. Tali principi possono riassumersi nei seguenti punti:

1. L'intervento deve essere studiato e condotto in modo da consentire l'asportazione in blocco del tumore, delle strutture contigue invase, delle vie linfatiche e delle linfoghiandole già interessate o che lo possano essere.
2. Ogni volta che sia possibile, è bene legare e sezionare i vasi venosi di maggior calibro che drenano sangue dal tumore prima di iniziare su quest-ultimo qualsiasi manovra chirurgica. Nel nostro caso è perciò opportuno sezionare i vasi mesenterici inferiori alla radice del mesocolon, fin dall'inizio, prima di cominciare la dissezione pelvica; si sezioneranno poi i vasi pelvici più profondi man mano che verranno raggiunti.
3. L'emostasi è facilitata dalla legatura e sezione preventiva dell'arteria mesenterica inferiore. Le arterie ipogastriche vanno legate distalmente all'origine delle arterie glutee superiori. Le altre arterie pelviche vanno legate man mano che vengono raggiunte. L'emorragia venosa viene facilmente controllata col tamponamento.
4. Il chirurgo deve condurre il suo in-

tervento col preciso scopo di asportare radicalmente il cancro. La preoccupazione di conservare il peritoneo per la ricostruzione del piano pelvico non deve limitare l'estensione della dissezione, in quanto la peritoneizzazione è un fattore di non grande importanza bastando una grossa pezza laparotomica, introdotta dal basso, a costituire in modo soddisfacente un piano pelvico artificiale.

5. Le cure pre—e post-operatorie debbono essere assai accurate. Della massima importanza, il poter disporre di un adeguato rifornimento di sangue intero da trasfondere prima, durante e dopo l'intervento.

6. Il metodo più semplice e meno pericoloso di anastomosi ureterale è l'impianto di tali organi nella parete anteriore dell'addome. Ciò, fra l'altro, evita la perdita di quel tempo prezioso che così spesso viene impiegato nell'eseguire le anastomosi uretero-coliche o gli altri tipi di entero-ureterostomie. Ciò ha il suo valore quando è necessario utilizzare ogni minuto per asportare radicalmente le strutture invase dal tumore e le linfoghiandole addomino-pelviche.

SUMÁRIO E CONCLUSOES

Toda via de acésso dirigida á extirpação de cancer invasivo do réto deve obedecer a certos principios bem estabelecidos, muitos dos quais são conhecidos dos cirurgiões que intentam extirpar cancer de qualquer parte do corpo. Esses principios devem ser resumidos como segue:

1. A via de acesso deve ser de tal modo planejada que torne possivel a excisão do tumôr com suas extensões e todos os linfaticos envolvidos ou potencialmente envolvidos, bem como os ganglios linfaticos, *em um só blóco.*

2. Os principais ductos venosos que saem da estrutúra extirpada devem ser ligados e divididos, quando possivel, antes da manipulação cirurgica. Isso é conseguido em larga extensão cortando-se os vasos mesentéricos inferiores na base do mesocolon antes de se iniciar a dissecção pelvica. A' medida que os vasos pelvicos profundos são alcançados devem ser ligados.

3. O contróle da hemorragia é facilitado por ligadura precóce da artéria mesentérica inferior. As artérias hipogastricas são ligadas distalmente á origem das artérios gluteas superiores. Outras arterias pelvicas são ligadas á medida que elas são atingidas. Sangramento venôso perturbadôr póde ser facilmente controlado por pressão.

4. O cirurgião deve procurar conseguir uma remoção radical do cancer. No que concérne a preservação do peritoneo para possivel reconstrução do assoalho pelvico diga-se que é do secundaria importancia e não deve limitar a extensão da disseção. A peritonização não é um importante fatôr e um assoalho artificial póde ser satisfatoriamente estabelecido por meio de um extenso tamponamento introduzido por baixo.

5. Cuidadoso planejamento deve preceder e seguir extensas operações por carcinoma. De maior importancia é a presença de um adequado fornecimento de sangue total para infusões, antes, durante e depois da intervenção cirurgica.

6. O mais simples e seguro método de tratar os uretéres é implantal-os na parêde abdominal anterior. Tal procedimento evita adicionalmente a pêrda de valiôso tempo operatorio frequentemente dissipado na execução de anastomóses ureterocolicas ou outros tipos de entero-ureterostomias. Isso é significativo quando cada minuto deve ser aproveitado para extirpar as extensões da lesão e os ganglios linfaticos.

Rupture of the Pregnant Uterus

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DURING the first half of the twentieth century many articles on uterine rupture have appeared in the American medical literature, emphasizing its importance as a danger to both mother and child. Analyses of large series of cases in different sections of the country show considerable variation in the incidence of uterine rupture, which ranges from 1 to 95[1] to 1 in 6,000[2] deliveries. It is estimated that about 200 maternal deaths occur annually in the United States from this cause. Obviously statistics concerning rupture of the uterus are difficult to evaluate. There must be a considerable number of unrecognized and unreported cases. On the other hand, statistics from obstetric centers are replete with records of seriously complicated cases transferred from smaller hospitals and the surrounding rural areas. For examples, 45 of 64 cases in the New Orleans Charity Hospital series were classified as emergencies on the patient's admission to the hospital (Beacham and Varino[3]). In our series, 4 (45 per cent) of the patients were admitted to the hospital after rupture.

Early recognition, energetic treatment and speed in preparation of the patient for surgical intervention are essential if the high mortality rate, both maternal and fetal, is to be lowered. The obstetrician must be constantly aware of this condition, especially in the care of multiparas and patients who have undergone cesarean sections or other uterine operations.

Tables 1 and 2 illustrate the decreasing incidence of rupture of the uterus. The average incidence in the early years of this century was about 1 in 800 deliveries, but reports in more recent years indicate a decrease to about 1 in 3,000. This is in keeping with the general improvement in obstetrical practice, reflected in lowered maternal and infant mortality for the later period. Also shown is a definite downward trend in the incidence of rupture due to obstetrical trauma. Improvement in hospital facilities has been largely responsible for this reduced mortality—particularly the development of blood banks. A factor in lowering the incidence of spontaneous and traumatic rupture has been fearless acceptance of the indicated cesarean operation. Approximately 50 per cent of the ruptures occur in the scars of previous sections; 20 per cent result from trauma due to obstetrical intervention, and the remaining 30 per cent are due to miscellaneous causes.

The patients whose cases we are reporting were all Caucasians, and the series includes all ruptures of the pregnant uterus encountered at the Crawford W. Long Memorial Hospital in Atlanta from Jan. 1, 1946 to July 31, 1951, during which time there were 28,678 deliveries. The cases are briefly summarized.

REPORT OF CASES

CASE 1.—A woman aged 24, gravida 2, para 1, was admitted to the hospital on March 19, 1947. The estimated date of confinement was April 13, 1947. Three years earlier, in another state, she had undergone a classic cesarean section before labor and with the membranes intact. Her postoperative course was said to be uneventful, although she was kept in bed for seventeen days.

The present pregnancy had been normal until two days prior to admission, when backache developed and the patient did not feel well. About 4 a.m. on the day of admission she noticed pain in the lower part of the abdomen and pain on urination. Three hours later the pain became continuous and diffuse. At 7:30 a.m. she was admitted to another

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hospital and given 1/3 gr of pantopon At 9 30 a m a vaginal examination was done and the patient told she was not in labor Observation was advised The patient was transferred to this hospital at 12 15 p m She appeared acutely ill, pale and clammy, and she complained of diffuse low abdominal pains The pulse rate ranged from 170 to 180 per minute, the respiratory rate was 30 per minute, and the blood pressure was 0/0 The abdomen was diffusely tender, and the uterus was very irritable and contracted irregularly A fetal extremity was palpable in the left lower quadrant of the abdomen The fetal heart tones were not heard There was dullness in both flanks, more marked on the left A tentative diagnosis of ruptured uterus shock and severe hemorrhage, with death of the fetus *in utero* was made The patient was given 1,000 cc of plasma and 1,500 cc of whole blood A laparotomy was done with sodium pentothal anesthesia When the abdomen was opened, the uterus was observed to be ruptured throughout the length of the previous scar The fetus was free in the abdominal cavity It weighed 5 pounds and 10 ounces (2,551 Gm) The blood pressure of the mother in millimeters of mercury was 130 systolic and 80 diastolic The pulse rate after completion of the last transfusion was 86 She was subsequently given two more transfusions of 500 cc each of whole blood, and the postoperative course was uneventful She was discharged on the sixth postoperative day (Section classic)

CASE 2—A woman aged 19, gravida 2, para 1, was admitted to the hospital at term on Nov 17, 1947, for an elective repeat cesarean section A classic cesarean section had been performed in 1946 because of cephalopelvic disproportion Her prenatal course had been normal except for a gain in weight of 41 pounds (18 6 Kg) During the night following admission the patient complained of pain in the lower part of the abdomen and was given nembutal for sedation When the abdomen was opened on the following morning a well organized blood clot about 6 cm wide and 18 cm long was seen overlying the uterus The clot was removed, and a perforation measuring 2 by 2 cm was observed at the upper angle of the old uterine scar The placenta was implanted just beneath this scar A living infant weighing 9 pounds and 8 ounces (4,306 Gm) was delivered by classic cesarean section and the wound resutured The postoperative course was uneventful, and the patient was discharged on the seventh postoperative day (Previous section classic)

CASE 3—A woman aged 29, gravida 3, para 2, was admitted to the hospital on Aug 5 1949 The estimated date of confinement was August 14 Her antepartum course had been normal She had been pregnant twice before and had undergone 2 cesarean sections The first of these was performed on March 3, 1939, because of eclampsia (the patient was not in labor) with delivery of a boy weighing 6 pounds (2,721 Gm) The second took place on June 5 1945 the fetus which weighed 8 pounds (3,628 Gm), was stillborn The uterus had ruptured and the fetus had been asphyxiated in the abdominal cavity, having been expelled through a rupture in the scar of the previous cesarean section The rent in the uterus was repaired At the time of admission to this hospital the patient was in questionable labor She was observed for approximately forty-eight hours and complained frequently of pain in the lower part of the abdomen The abdomen was opened, and a rupture of the uterus was observed extending from the top of the fundus into the lower uterine segment throughout the old scar The baby, which weighed 5 pounds and 9 ounces (2,049 Gm), cried spontaneously The uterus was repaired and the fallopian tubes transected

The postoperative course was uneventful, and the patient was discharged improved on the seventh postoperative day

CASE 4—A woman aged 37, gravida 9, para 7, with a history of 1 abortion, was admitted to the hospital at 10 05 p m on July 22, 1948, apparently in early labor, but the examiner was unable to reach the cervix by rectal examination The membranes were ruptured, and there was some show of blood Castor oil had been taken at 9 p m At 1 20 a m the cervix was dilated 4 cm and was 50 per cent effaced The fetal head was presenting at the plus 1 station By now the patient was complaining considerably of pain, but the contractions were apparently not intense At this time she was given 100 mg of demerol with scopolamine (1/100 gr) intramuscularly Soon the uterus was in a state of slight tonic contraction Ten minutes later the patient was complaining of severe and continuous abdominal pain The fetal head was "crowning," and she was given nembutal (4 gr) intravenously Open drop ether was

TABLE 1.—*Incidence*

Author	Date Reported	Number of Deliveries	Number of Ruptures	Incidence
Lobenstine[1]	1909	60,977	78	1:781
Davis[5]	1925	147,625	184	1:802
Davis[6]	1927	86,648	106	1:817
Knowles[7]	1936	6,009	12	1:500
Sheldon[8]	1936	47,554	26	1:1,829
Gufstafson & Crump[9]	1938	9,000	6	1:1,500
Acken[10]	1940	25,935	15	1:1,729
Burkons[11]	1941	17,793	12	1:1,482
Sadowsky[12]	1942	9,079	13	1:698
Bill, et al.[13]	1944	69,391	23	1:2,756
Morrison & Douglass[14]	1945	65,916	45	1:1,464
Beacham and Varino[3]	1945	57,144	64	1:892
Lynch[15]	1945	41,706	44	1:1,118
Delfs & Eastman[16]	1945	53,574	53	1:1,010
Dugger[17]	1945	318,103	105	1:3,029
Stander, H. J.[22]	1945	34,356	18	1:1,908
DeLee & Greenbill[21]	1947	47,945	30	1:1,600
Fitzgerald, et al.[18]	1949	92,226	42	1:2,184
Von Der Abe*[19]	1950	23,506	23	1:4,700
Brierton[20]	1950	111,753	57	1:1,961
Cosgrove, S. A.[23]	1951	116,885	36	1:3,219
Our series	1951	28,678	9	1:3,173

*Figures do not include uterine rupture occurring as a result of neglect or those cases of rupture in which the duration of labor was longer than two hours. For these reasons, these figures do not seem comparable.

TABLE 2.—*Causes of Uterine Rupture*

					Spontaneous							
					Total		Due to Cesarean Scar		Due to Other Causes		Due to Obstetrical Trauma	
Author	Period	No. of Deliveries	No.	Incidence of Rupture	No.	%	No.	%	No.	%	No.	%
Sheldon[8]	1918-34	47,554	26	1:1,829	9	34.6	5	19.2	4	15.3	17	65.4
Lynch[15]	1920-45	41,706	44	1:1,118	17	38.6	11	25	6	13.6	27	61.3
Delfs and Eastman[16]	1920-45	53,574	53	1:1,010	27	50.9	10	18.8	17	32.1	26	49.1
Acken[10]	1924-39	25,935	15	1:1,729	10	66.6	8	53.3	2	13.3	5	33.3
Bill, Barney & Melody[13]	1925-41	69,391	23	1:2,756	15	65.2	13	56.5	2	8.7	8	34.7
Fitzgerald[18]	1928-47	92,226	42	1:2,196	24	57.1	9	21.4	15	35.7	18	42.8
Dugger[17]	1931-41	318,103	105	1:3,029	60	57.4	34	32.2	26	25.1	45	42.6
Brierton[20]	1932-46	111,753	57	1:1,961	47	82.4	26	45.6	21	36.8	10	17.6
Morrison and Douglass[14]	1940-43	65,916	45	1:1,465	22	48.8	17	38.7	5	11.1	23	51.2
Gustafson[9]		9,000	6	1:1,500	4	66.6	4	66.6	0	0	2	33.3
Present study	1946-51	28,678	9	1:3,173	8	88.1	6	66.6	2	24.8	1	11.1

started. There was no external bleeding. The impression was that of abruptio placenta. The baby weighed 7 pounds and 8 ounces (3,403 Gm.) and was delivered by low forceps extraction at 1:44 a.m. The cord was not pulsating, and the placenta was delivered two minutes later. There was no unusual amount of bleeding at this time. The condition of the baby was very poor; stimulants and resuscitation were required. This diverted attention from the mother, and it was not noted that the mother was in shock until some minutes later. By this time there was extensive uterine bleeding. The uterus was explored, and a large tear was palpated in the right wall of the fundus.

At 1:55 a.m. a laparotomy was started in the delivery room, and at the same time transfusion of whole blood was begun. The uterus was ruptured on the right side, the rupture extending into the right broad ligament. The patient was pronounced dead at 3:20 a.m. There was approximately 200 cc. of blood in the abdomen when it was opened. On pathologic examination no cause of the rupture could be found. (Rupture due to multiparity with cervical scar, right.) The baby survived, but died eight months later of an unknown cause.

CASE 5.—A woman aged 24, gravida 2, para 2, was admitted to the hospital on Aug. 29, 1949, in her seventh postpartum week. On July 11, in another state, she had been delivered spontaneously of a girl weighing 9½pounds (4,309 Gm.) (posterior occipital position). The loss of blood was normal. Next morning the patient had a sudden onset of abdominal pain referred to the right shoulder, and in twenty-four hours she had signs and symptoms of pelvic peritonitis. The patient ran a septic course and was treated with blood transfusions and antibiotics. After two weeks she was dismissed as improved. One week later she had a sudden severe hemorrhage and went into deep shock. The uterus and vagina were packed, and she was given transfusions. Three days later she had another hemorrhage, but remained in the hospital for two weeks without further bleeding. One week later (the sixth week post partum) the patient had another hemorrhage. Examination at that time revealed a tear in the lower uterine segment which extended into the right broad ligament. On August 25 a hemorrhage occurred during packing and the patient went into shock again. Thereafter the temperature was 1 to 2 degrees above normal, with no signs of peritonitis. She was admitted to this hospital on August 29. At that time the patient's blood pressure in millimeters of mercury was 110 systolic and 60 diastolic, the pulse rate 90, and the temperature 97. There was tenderness but no rigidity in the lower part of the abdomen. A rupture of the uterus was present, extending into the right broad ligament with injury to the uterine broad ligament vessels. A total hysterectomy was performed. The patient ran a stormy postoperative course due to pyelitis (A. aerogenes), which responded to aureomycin. She was discharged on the twelfth postoperative day. (Spontaneous rupture: cause undetermined.)

CASE 6.—A woman aged 33, gravida 4, para 3, whose expected date of delivery was Dec. 20, 1950, was admitted to the hospital on December 29 for elective medical induction. Her prenatal course had been normal. This patient had had three long and difficult labors. Her last labor was terminated by breech extraction followed by postpartum hemorrhage. She was given pitocin intranasally and intramuscularly for induction. She never had more than light uterine contractions, and at no time did she have tetanic contractions. The last dose of pitocin was 2 minims given intranasally only two minutes before the patient complained of sudden severe pain in the abdomen followed by rapid shock. The dose prior to this had been given more than two hours previously. Transfusions of whole blood were started in both arms under pressure, and a laparotomy was begun. Twenty minutes after detection of the rupture a dead fetus, with the placenta, was noted in the abdominal cavity. A rupture in the posterior uterine wall from the fundus to the lower segment and into the left broad ligament was observed. Supracervical hysterectomy was done. Although the patient was still in deep shock at the beginning of the operation, her condition was good by the end of the procedure, when a total of 2,000 cc. of whole blood had been given. The postoperative course was uneventful. (Spontaneous labor: pituitrin induction; possible old laceration.)

CASE 7.—A woman aged 18, gravida 2, para 1, was transferred to Crawford W. Long Memorial Hospital from a hospital in a small Georgia town on Jan. 18, 1951. At the time of her first delivery a classic cesarean section had been done in another state for cephalopelvic disproportion. The antepartum course was uneventful until four and a half hours prior to admission, when she began to experience abdominal pains and vaginal bleeding. A vaginal examination was made prior to admission, and no placenta tissue was palpable over the cervix. The patient had apparently bled profusely. On admission she was in shock, with a blood pressure level of 60 systolic and 0 diastolic, and the pulse rate was 72. The uterus was very tense, but the fetal heart tones were good. There was no flank dullness. The anterior surface of the uterus was tender, particularly the lower part. No vaginal examination was undertaken, but plans were made for immediate operation. The patient was taken to the operating room in shock, with blood being transfused into both arms. A tear was found in the anterior wall of the uterus at the lower end of the old scar. There were numerous omental adhesions around this area, isolating the rupture so that all the blood went into the uterus rather than into the abdominal cavity. The baby, weighing 7 pounds and 13 ounces (3,544 Gm.) was in good condition.

TABLE 3.—*Uterine Rupture, Group 1*

Previous Section

Age of Patient	Gravida	Para	Previous Section	Hours in Labor	Type of Delivery	Treatment	Interval between Rupture and Operation	Location of Rupture	Cause of Maternal Death	Cause of Fetal Death
24	2	1	Classic	None	Abdominal	hysterectomy	6 hours	Entire scar		Intra-uterine asphyxia
19	2	1	Classic	None	Abdominal	uterus repaired	Unknown	Upper angle		
29	3	2	Classic	None	Abdominal	uterus repaired	Unknown	Entire scar		
18	2	1	Classic	4	Abdominal	hysterectomy	4½ hours	Lower angle		
21	4	3	Classic	1	Abdominal	hysterectomy	1 hour	Entire scar		
33	4	3	Classic	12	Abdominal	hysterectomy	2 hours	Entire scar		Intra-uterine asphyxia

*This patient had had two previous sections with rupture of the uterus and loss of the fetus at term at second section.

TABLE 4.—*Spontaneous Uterine Rupture (Group 2 and 3)*

GROUP 2

Age of Patient	Gravida	Para	Type of Delivery	Site of Rupture	Interval Between Rupture to Operation	Treatment	Intrapartum Oxytocics	Cause of Death Maternal	Cause of Death Infant
37	9	7	Low Forceps	Lower Right Segment	11 minutes	Hysterectomy	No	Hemorrhage with shock	
24	2	2	Spontaneous P.O.P.	Lower Right Segment	7 weeks	Hysterectomy	No		
GROUP 3						Obstetrical Trauma			
33	4	3	Abdominal	Posterior Fundus through Lower Segment	20 minutes	rec-	Yes		Intra-uterine asphyxia

A supracervical hysterectomy was done; the patient withstood the procedure well. The postoperative course was uncomplicated. Mother and baby were discharged in good condition on the seventh day. (Previous section scar.)

CASE 8.—A woman aged 21, gravida 4, para 3, at term, was admitted to the hospital on April 13, 1951, in shock. Her last pregnancy had been terminated by classic cesarean section because of placenta praevia. About an hour prior to admission she had a sudden onset of severe pain in the lower part of the abdomen No blood pressure reading or pulse rate could be obtained, nor could any fetal heart tones be heard Transfusions of blood plasma were started immediately, followed by transfusions of whole blood A laparotomy was begun forty five minutes after admission The uterus was ruptured throughout the length of the scar, with about 1,500 cc of blood in the abdominal cavity The baby, weighing 7 pounds and 15 ounces (3,600 Gm), was delivered alive By the end of the operation (a supracervical hysterectomy) the mother had received 3,000 cc of whole blood and had a blood pressure of 120 systolic and 78 diastolic, with a pulse rate of 136 The postoperative course was uneventful, and mother and baby were discharged from the hospital on the seventh postoperative day

CASE 9—A woman aged 33, gravida 4, para 3, was admitted to the hospital on May 30, 1951, in shock, in the thirty sixth week of pregnancy She had been suffering from pain in the lower part of the abdomen for twelve hours prior to admission, but the pain had become severe during the past two hours During this time she was in her home under the care of her physician, who made a diagnosis of ruptured uterus Her last pregnancy had been terminated by a classic cesarean section because of placenta praevia

On her admission to the hospital the blood pressure and pulse rate were unobtainable Transfusions of whole blood were given immediately, and surgical intervention was begun The uterus was ruptured throughout the length of the old scar and contained a dead fetus which weighed 5 pounds and 12 ounces (2 609 Gm) There was approximately 2 000 cc of blood in the abdominal cavity A supracervical hysterectomy was done By the end of the operation the patient had received 3 000 cc of whole blood, the blood pressure was now 110 systolic and 70 diastolic and the pulse rate 140 per minute The postoperative course was uneventful exc[illegible] a minor infection of the urinary tract which responded to terramycin, and the patient was discharged from the hospital on the seventh postoperative day (Rupture due to previous section)

COMMENT

It is interesting to note that in the 6 cases in which rupture followed a previous cesarean section, the previous operation was of the classic type The most prevalent symptom was low diffuse abdominal pain During the period covered by this report, the cesarean sections done in this hospital were 50 per cent classic, 48 3 per cent low cervical, 0 625 per cent extraperitoneal, and 0 843 per cent cesarean hysterectomy There was no maternal mortality in this series There were 2 fetal deaths In the group of patients with spontaneous rupture, there was 1 maternal death and 1 fetal death

In the case attributed to obstetrical trauma, pitocin had been given to a multipara intranasally and intramuscularly, the last dose of the drug having been administered intranasally only two minutes before the rupture occurred Only prompt operation prevented the mother's death in this case

Internal podalic version, which is reputedly one of the most common causes of rupture, played no part in our series, although 33 operations of this type were performed in this hospital during this time

CONCLUSIONS

1 Rupture of the uterus becomes a less frequent complication as obstetric practice improves However, it is a most serious complication of pregnancy, and the mortality rate approaches 100 per cent for both mother and fetus unless the condition is promptly recognized and energetically treated Improvement in hospital practice has reduced the occurrence of uterine rupture to about 1 in 3,000 deliveries

2 Every patient who has undergone a previous cesarean section should be *carefully watched during subsequent pregnancies* Previous vaginal delivery does not exclude the possibility of rupture

3 The position of the fetus should be determined early in labor Obstructive dystocia may cause spontaneous rupture of the uterus Roentgen pelvimetric examination should be done before labor begins in all doubtful cases

4 Scars of the cervix or fundus pre-

dispose to rupture of the uterus. The symptoms and signs of uterine rupture due to separation of a cesarean section scar may vary greatly.

5. Internal version, though not a factor in our series, is one of the most common causes of rupture of the uterus. It is a dangerous procedure and should not be attempted unless certain indications are met.

6. The uterus should be explored in every case in which shock or persistent bleeding follows a major vaginal operative procedure. Shock and hemorrhage are not contraindications to surgical intervention in such a case, provided oxygen and adequate blood are available and are being given when the operation is begun.

7. Intrapartum administration of oxytocics by any route is a precarious procedure. When they are given, a mask and a can of ether should be kept by the bedside, and a physician should be constantly in attendance.

8. The cardinal principles of treatment are immediate adequate blood transfusions and surgical intervention.

RÉSUMÉ ET CONCLUSIONS

1. La rupture de l'utérus devient une complication moins fréquente comme la pratique de l'obstétrique sàméliore. Toutefois, c'est une complication très sérieuse de la grossesse et sa mortalitéapproche un taux de 100% pour la mère et pour le foetus à moins que le diagnostic soit fait très rapidement et traité énergiquement. L'amélioration de la pratique hospitalière a réduit le nombre de ruptures utérines à une sur 3,000 accouchements.

2. Chaque patiente qui a eu une nésarienne devrait être surveillée soigneusement durant la grossesse suivante. Un premier accouchement normal chez une secondipare n'exclut pas la possibilité d'une rupture utérine.

3. On devrait déterminer au début du travail la position du foetus; une dystocie obstructive peut causer une rupture spontanée. Une pelvimétrie par radiographie devrait être faite avant le début du travail dans tous les cas de doute.

4. Ces cicatrices du col ou du fond prédisposent à la rupture. Les symptômes et les signes de la rupture utérine par séparation d'une cicatrice d'incision de césarienne peuvent varier grandement.

5. La version interne, même si elle n'est pas un facteur dans notre série de cas, est une des causes les plus communes de la rupture de l'utérus. C'est une manoeuvre dangereuse et on ne devrait pas la pratiquer à moins de recontrer une indication précise.

6. On devrait explorer l'utérus dans chaque cas où il y a état de shock ou hémorragie persistante à suite d'une manoeuvre par voie vaginale. Le shock et l'hémorragie ne sont pas des contre-indications dans ces cas à la condition d'avoir la quantité suffisante d'oxygène et de sang au moment de l'opération.

7. L'administration d'ocytociques pendant le travail par n'importe quelle voie est risquée sans éther à sa disposition et la présence du médecin.

8. Les grands principes du traitement sont la transfusion immèdiate du sang et l'intervention chirurgicale.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

1. Mit den Fortschritten auf dem Gebiete der Geburtshilfe kommt ein Riss der Gebaermutter als Komplikation immer seltener zur Beobachtung. Nichtsdestoweniger handelt es sich um eine aeusserst ernste Komplikation der Schwangerschaft, deren Sterblichkeitsquote fuer Mutter und Foetus nahe an 100% herankommt, wenn die Erkrankung nicht sofort erkannt und energisch behandelt wird. Die Verbesserungen in der Ausuebung der Geburtshilfe an Krankenhaeusern haben das Vorkommen der Gebaermutterzerreissung auf etwa einen Fall bei 3000 Entbindungen herabgesetzt.

2. Jede Patientin, an der einmal ein Kaiserschnitt ausgefuehrt worden ist, muss waehrend spaeterer Schwangerschaften sorgfaeltig beobachtet werden.

Die Tatsache, dass eine solche Frau vorher einmal eine Entbindung durch die Scheide durchgemacht hat, schliesst die Moeglichkeit einer Ruptur nicht aus

3 Die Lage des Foetus sollte im fruehen Beginn der Entbindung bestimmt werden Gebaerschwierigkeiten in folge von Obstruktion koennen zum spontanen Riss der Gebaermutter fuehren In allen zweifelhaften Faellen sollte eine roentgenologische Beckenmessung vor Einsetzen der Wehen ausgefuehrt werden

4 Bestehende Narben am Halse oder im Fundus der Gebaermutter praedisponieren zu Gebaermutterriss Die Sympttome und Krankheitszeichen eines infolge von Nachgeben einer Kaiserschnittnarbe auftretenden Gebaermutterrisses koennen recht verschieden sein

5 Die innere Wendung ist eine der haeufigsten Ursachen der Uterusruptur, wenn auch in unserer Krankenreihe dieser Faktor keine Rolle spielte Die innere Wendung ist ein gefaehrliches Verfahren und soll nur bei ganz bestimmten Indikationen versucht werden

6 Die Gebaermutter sollte in allen Faellen, wo ein groesserer operativer vaginaler Eingriff von Schock oder fortgesetzter Blutung gefolgt wird, exploriert werden Schock und Blutung stellen keine Gegenanzeige zum chirurgischen Eingriffen in solchen Faellen dar, vorausgesetzt, dass Sauerstoff und genuegende Mengen Blut zur Verfuegung stehen und am Beginn der Operation verabfolgt werden

7 Die Verabfolgung von wehenanregenden Mitteln waehrend des Geburtsvorganges ist, auf welchem Wege immer verabreicht, ein heikles Verfahren Wenn es durchgefuehrt wird, muss eine Maske und eine Flasche mit Aether am Krankenbett bereit gehalten werden Ein Arzt muss staendig zur Verfuegung stehen

8 Die wesentlichen Grundsaetze der Behandlung bestehen in [a] unmittelbarer ausreichender Bluttransfussion und [b] chirurgischem Eingriff

RESUMEN Y CONCLUSIONES

1 La ruptura uterina se vuelve una complicacion menos frecuente a medida que la practica obstetrica mejora Sin embargo, constituye una complicacion muy grave de la preñez, alcanzando su indice de mortalidad el 100% tanto para la madre como para el feto, con excepcion de que el estado sea reconocido prontamente y tratado energicamente La practica hospitalaria mejor ha reducido la incidencia de ruptura uterina a una en 3,000 partos aproximadamente

2 Debe vigilarse cuidadosamente durante los embarazos subsiguientes a toda paciente a quien se haya practicado la operación cesarea El parto vaginal anterior en una mujer de este grupo no excluye la posibilidad de ruptura

3 La posicion del feto debe determinarse prontamente en el trabajo del parto La distocia obstructiva puede causar una ruptura uterina espontanea Debe efectuarse la pelvimetria rontgen antes de comenzar el trabajo en todos los casos dudosos

4 Las cicatrices cervicales o fundicas predisponen a la ruptura uterina Los sintomas y signos de ruptura uterina por dehiscencia de una cicatriz por seccion cesarea pueden variar grandemente

5 La versión interna, aun cuando no constituye un factor en la serie de que se trata, es una de las causas mas comunes de ruptura uterina Es un procedimiento peligroso y no debe intentarse sin determinadas indicaciones al respecto

6 El utero debe explorarse cada vez que un procedimiento operatorio vaginal mayor sea seguido de choque o hemorragia persistente Estos no son contraindicaciones para la intervencion quirurgica en dichos casos, con tal de que se cuente con oxigeno y sangre adecuada y se administren al comenzar la operacion

7 La administracion intrapartum de ocitocicos por cualquier via es un procedimiento precario En caso de emplearlos deben tenerse junto al lecho una mascarilla y eter Debe contarse con la vigilancia constante de un medico

8 Los principios cardinales del tratamiento son transfusiones sanguineas

adecuadas inmediatas e intervención quirúrgica.

CONCLUSIONI RIASSUNTIVE

1. La rottura di utero diviene sempre meno frequente col miglioramento della pratica ostetrica. Comunque, si tratta di una complicanza molto grave, con una mortalità che si avvicina al 100% sia per la madre che per il feto, a meno che non venga riconosciuta con prontezza e curata energicamente. I progressi nella pratica ospedàliera hanno consentito di ridurre la frequenza della rottura uterina a un caso su 3000 gravidanze.
2. Ogni donna sottoposta a taglio cesareo deve essere vigilata con cura nelle gravidanze successive. In tali donne precedenti parti vaginali non escludono la possibilità di rottura.
3. La posizione del feto deve essere stabilita precocemente durante il travaglio. La distocia occlusiva può causare la rottura spontanea dell'utero. In ogni caso dubbio si deve eseguire la Roentgenpelvimetria prima dell'inizio del travaglio.
4. La presenza di cicatrici sul collo o sul fondo predispone alla rottura. I sintomi di rottura per cedimento di cicatrice cesarea sono molto vari.
5. Il rivolgimento interno è una delle cause più frequenti di rottura di utero, benchè non figuri nella serie personale. E' una manovra pericolosa che non dovrebbe essere tentata se non su indicazione precisa.
6. Si dovrà esplorare l'utero ogni volta che un intervento di chirurgia maggiore vaginale sia seguito da shock o da emorragia persistente. Shock ed emorragia non controindicano l'intervento, in tali casi, purchè si disponga di ossigeno e di quantità sufficienti di sangue al momento di iniziare l'operazione.
7. La somministrazione di farmaci ossitocici durante il parto, per qualunque via, deve essere eseguita con prudenza, tenendo pronto l'apparecchio di anestesia, e sotto la continua sorveglianza del medico.
8. I punti principali della cura sono rappresentati dalla trasfusione, immediata e sufficiente, e dall'intervento chirurgico.

SUMÁRIO E CONCLUSÕES

1. A rotura do utero se torna uma complicação menos frequente, á medida que a tecnica obstetrica se aperfeiçõa. E' a mais seria complicação da gravidez, contado, e sua taxa de mortalidade aproximase de 100 por cento para ambos mãe e féto, á menos que a condição seja prontamente reconhecida e energicamente tratada. O aperfeiçõamento da protica hospitalar tem reducido a incidencia de rotura uterina para 1 em cêrca de 3,000 partos.
2. Cada paciente que tem sido submetida á operação cezareana deve ser cuidadosamente observada durante as ulteriores gestações. Parto vaginal anterior em uma mulher deste grupo não exclúe a possibilidade de rotúra.
3. A posição do féto deve ser ser determinada cêdo durante o trabalho de parto. Distócia obstrutiva pode causar rotura expontanea do utero. A pelvimentria radiologica deve ser proticada antes que o trabalho de parto comece em todos os casos de duvida.
4. A existencia de cicatrizes da cervice ou do fundo do utero predispôem á rotúra. Os sintômas e sinais da rotura uterina devidos a abertura de um corte cezario cicatricial podem variar enormemente.
5. Versão interna, ainda que não seja um fatôr considerado em nossa série, é uma das causas mais comuns da rotura do utero. E' um processo perigôso e não deve ser tentado, á menos que certas indicacões sejam encontradas.
6. O utero deve ser explorado em todos os casos nos quais o choque ou persistente hemorragia seguem-se á uma intervenção vaginal operatória. Chóque e hemorragia não são contraindicações a intervenção cirurgica nestes casos, considerando-se que oxigenio e sangue adequado estejam á mão e possam ser administrados quando a operação se inicia.
7. A admnistração intrapartum deox-

itocicos por qualquer via é um processo precario Quando são empregados, uma mascara e uma lata de eter devem estar ao alcance do medico Um medico deve estar constantemente de guarda

8 Os principios cardeass do tratamento são (1) transfusão de sangue adequada imediata e (2) intervenção cirurgica

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New Roster in Preparation

Letters have been received by the Editorial Office concerning the omission of names from the Roster A new edition is now in preparation To avoid repeated omissions, members are requested to send full data on their teaching connections etc as soon as possible to the Editorial Office International College of Surgeons 1516 Lake Shore Drive Chicago 10 Illinois

Intra-Arterial Transfusion of Blood

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ALTHOUGH hemorrhagic shock cannot be consistently anticipated, its occurrence demands prompt and effective treatment, which surgeons at times are unprepared to render. It is a fundamental surgical principle that arrest of hemorrhage and restoration of blood circulation take priority over all else. There is an old axiom to the effect that without pulse there is no therapy, but intra-arterial transfusion refutes this rule.

It has been authoritatively stated[1] that Halstead proposed arterial transfusion in 1883, but apparently nothing came of it; and only recently has it been adopted clinically. We have seen the passing of the Murphy drip and subcutaneous infusions of electrolytes succeeded by the intravenous use of blood and plasma. Intra-arterial transfusion is the next step in this progression. The advance that has been made in treatment of the shock associated with hemorrhage was made possible largely through the establishment of blood banks; the results have been spectacular. We have relied in large measure on the administration of blood and plasma by intravenous infusion, and in the majority of cases it has proved adequate, but in the presence of exceptionally swift and profuse hemorrhage a more rapid and, especially, a more physiologic method of replacement is necessary.

The physiologic nature of cardiac contraction and the mechanism of its initiation are beyond the scope of this paper and the authors' knowledge, but it is the opinion among investigators in this field that whole blood injected into the arterial system of an exsanguinated animal will reactivate and maintain the cardiac cycle if only a brief period has elapsed after the arrest of the heart's action. Howell[2] quoted Anrep and Segal as follows: "It is *a priori* evident that the aortic blood pressure must constitute the main factor in the control of coronary circulation." Glosser and Page[3] demonstrated to what extreme degree an animal may be bled and then resuscitated by arterial transfusion. Their conclusions have been corroborated by others. Gardner[4] was one of the first to produce, deliberately, extreme hypotension in a neurosurgical procedure by withdrawing a large amount of blood to control bleeding and then restoring the blood pressure by reinjecting the blood.

Kohlsteadt and Page,[5] on the suggestion of Seeley, investigated the practical aspects of intra-arterial transfusion and concluded from well controlled experiments that blood introduced into the aorta and thence into the coronary arteries relieved myocardial ischemia and set in motion the cardiac cycle. It was assumed that the filling of the coronary arteries was the "trigger" that initiated ventricular contraction. When the heart is arrested as the result of hemorrhage, the aortic valves are closed. As the aorta is filled by transfused blood, the coronaries are distended with the blood, and this seemingly inaugurates the mechanism of the cycle. As the blood enters the aorta from the origin of the transfusion, whether radial or femoral, all branches of the aorta are rapidly filled above the level of ingress of the transfused blood. A pressure of only 50 mm. of mercury will distribute the blood quickly, even before the ventricular contraction takes place, and its effects are noted in the stimulation of respiration as the carotid and vertebral arteries receive a supply of blood. The respiratory movements hasten oxygenation of the blood and contribute materially to the resuscitation of the pa-

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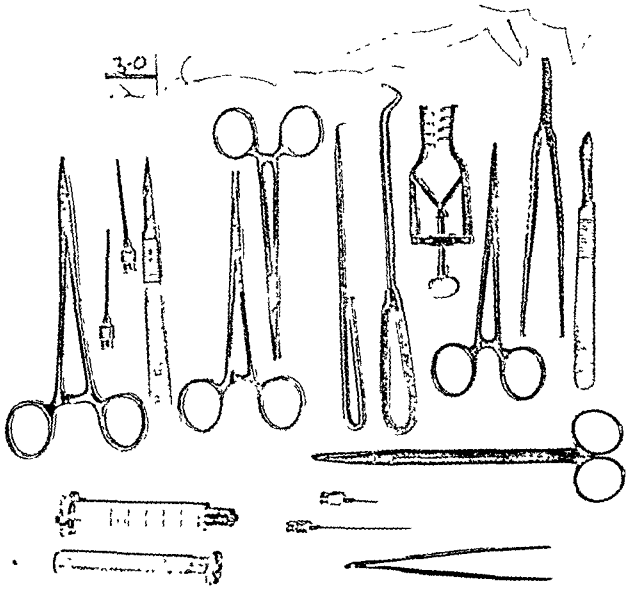

Fig. 1.—Layout for intra-arterial transfusion.

tient. Trencher and Elkins[6] reported from their research that pressure levels returned much more promptly when blood was given intra-arterially than when it was infused intravenously, and this has been the experience of most investigators, with the possible exception of Aldrich and Morton;[7] but they were dealing with patients who were not in a state of severe collapse.

In considering the indications for the use of intra-arterial transfusion it should be emphasized that this type of transfusion is not a proper substitute for intravenous transfusion except in those cases in which the blood pressure is very low, or cannot be recorded, or in cases of arrest of cardiac action [illegible]ue to [illegible]orrhage. In the latter cases blood introduced into the veins, even under pressure, has a long route and a slow one to travel in reaching the coronary arteries, even if it could be forced or propelled in some manner through the right chambers of the heart and lungs. The most direct route to the coronaries is the one of choice, and this is the arterial highway.

The literature of research in this field leaves no doubt concerning the effectiveness of intra-arterial transfusion in restoring or accelerating heart action, blood pressure, and blood volume in the presence of acute exsanguination. The mechanism may lack a satisfactory expl[illegible] end [illegible]esults speak for th[illegible]nt clinical evidence, if one may judge from the printed page, to warrant the statement that the method is safe, practical and life-saving. Although its use is steadily growing, there has been no standardization in respect to the indications for its use, the amount of blood to be used, the rate at which it should be given, the technic of administration or the apparatus employed.

It is obvious that, in a grave emergency in which intra-arterial transfusions are used, there is little time to record details or formulate principles, as the urgent objective is to save the patient. After a series of such cases, on reflection, certain concrete facts stand out, and a somewhat crude routine has grown out of this experience which we hope can be refined and defined as it is more generally employed. It may be well to restate that the outstanding indications for this type of transfusion apply to those cases in which hemorrhage has been so rapid and copious that the usual venous routes are totally inadequate. Perhaps the best examples of such emergencies are postpartum hemorrhage and the so-called massive hemorrhage associated with gastroduodenal ulcer. If the circulation can be maintained by intra-arterial transfusions, surgical measures can be carried out which will not only control the hemorrhage but permit a curative operation.

With the pressure at zero and without a palpable radial pulse, we have repeatedly seen the circulation restored in an unbelievably short time. It is accepted generally that resuscitation is futile if more than seven minutes elapse after the heart action is arrested, as irreparable damage to the cerebral cells ensues, and, even if life is maintained, the faculties remain permanently damaged. Some remarkable exceptions to this statement have been reported, but they are usually not well authenticated. Intra-arterial transfusion, therefore, has a place in resuscitation or in maintenance of blood pressure when it registers below 50 mm. of mercury, but its administration must not be delayed to the point at which irreversible changes have occurred.

For that reason it is becoming the practive in those institutions where massive hemorrhages are not too infrequent to provide a sterile, well equipped set-up that can be used at a moment's notice, and what is equally important, to have a competent team or person always available to put it to use in a matter of minutes. There is no time in these emergencies to assemble and sterilize instruments. This duty can very well be assigned to a member or members of the anesthetic or surgical house staff, but above all must be instantly available. Generally there is sufficient time for at least a brief anticipation of the critical hemorrhage, particularly if the patient has been hospitalized and a working diagnosis has been made. We have found that a small, double-bladed self-retaining retractor or two small blunt rake retractors, a small scalpel and a bistoury blade, a narrow blunt hook, one needle threaded with silk, hemostats, a pair of scissors, pick-up forceps, gauze sponges, and cannulas of various sizes should be in the pack, sterilized and always ready for use. If someone would devise a small instrument that would elevate the artery and maintain it temporarily in a stable position, the entire operation could be done by one person without assistance.

The transfusion may be given at the bedside or in the operating room, depending somewhat on the urgency of the condition and the speed with which the patient can be transported. On several occasions we have made it a bedside procedure and moved the patient to the operating room with the transfusion functioning. The delay of an elevator may be disastrous if an attempt is made to transfer a patient before starting the transfusion.

We have routinely used the radial artery, but we have no prejudice against the use of the femoral artery or the aorta (when the abdomen is open). We recognize one objection to use of the radial artery, namely, partial loss of the circulation in the area it supplies, resulting in impairment of the function of the thumb and index finger, or even gangrene in these members. We have had no permanent damage to any area supplied by the radial artery, although some cyanosis has been present for a few hours in several cases. We attribute this to arterial spasm, and sympathetic nerve block has always been promptly effective. We have found that use of the radial artery does not encroach upon the field of the operating surgeon, should he be undertaking an abdominal operation, and the artery is easily identified and exposed.

The incision is made with the region under local anesthesia, when necessary, directly over the artery in its long axis at the wrist. The pulsation of the artery is not always present, but, as the position of this vessel is fairly constant, the usual landmarks are reliable guides. With retractors the vessel is exposed and easily identified. It is elevated by a small, blunt hook passed beneath it; then it is incised about 2 mm. in its longitudinal axis and a No. 15 blunt-ended transfusion needle is inserted. A fixed position is maintained by passing a silk suture around the artery and tying the needle in place snugly but not tightly. When the needle is shown to be functionally fixed, the skin is closed with several interrupted silk sutures. Adhesive tape applied to the tubing or to the hub of the needle will aid in keeping it securely in place.

The blood may be introduced by gravity alone or by pressure. Air can be forced into the blood donor bottle by a simple rubber bulb with a valve, such as is used in the sphygmomanometer, and a pressure gauge can be attached to register the pressure in the bottle. A pressure of 200 mm. of mercury can be secured very quickly, but this type of apparatus takes more time to set up and is a bit cumbersome. A recent addition to the transfusion sets is a plastic bulb with two floats, which is incorporated in the line between the bottle and the patient. Pressure on the bulb at regular and frequent intervals raises the pressure at will to force the blood into the radial artery and the aorta. We have had some inconvenience with the valves sticking and the connections blowing out. A little more experience will probably overcome these handicaps.

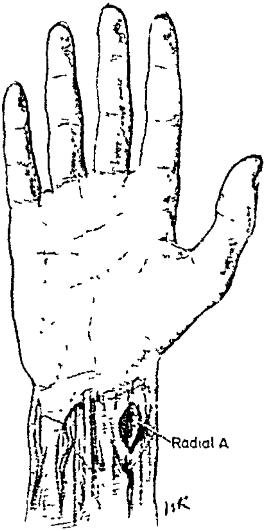

Fig. 2.—Anatomic relations of radial artery.

We have found that by merely elevating the donor bottle 5 feet above the patient we can obtain ample pressure to introduce blood at an effective rate. At a level of 50 cm. above the needle in the artery, a pressure of 30 mm. of mercury is registered; at 100 cm. above the needle, a pressure of 60 mm. is maintained; and at 150 cm., a pressure of 90 mm. has been established. These readings may vary slightly, depending on the viscosity of the blood, the size of the tubing and the diameter of the needle, but on the whole they are reliable. As the patient's blood pressure rises, the rate of flow decreases

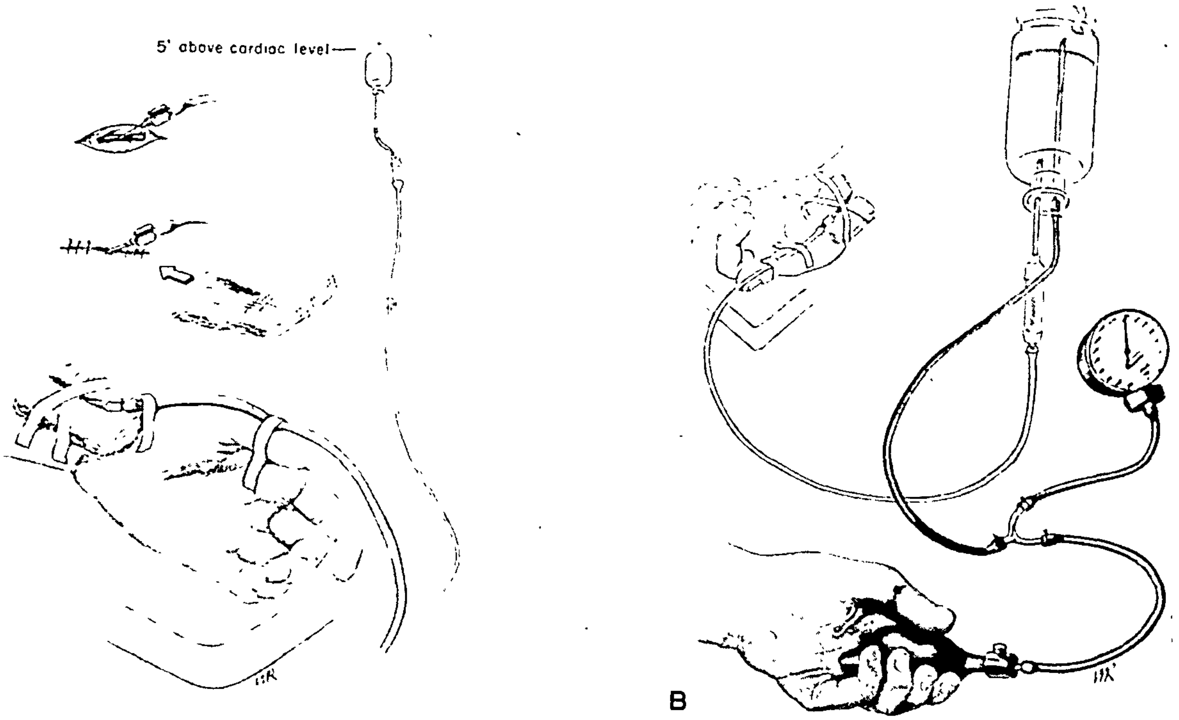

Fig. 3. *A*, intra-arterial transfusion by gravity alone. *B*, intra-arterial transfusion by controlled pressure.

until there is a balance between the weight of the blood column and the systolic pressure.

Should the condition of the patient be so extreme that there exists a demand for a small quantity of blood to be injected into the arterial tree with the utmost speed, a three-way valve is inserted just proximal to the needle. It is then possible, with a 10 cc. or 20 cc. syringe, to pull blood out of the donor tube and inject it rapidly and with sufficient pressure to throw it into the aorta and coronaries in a fraction of a minute.

The quantity of blood that may be introduced by the way of the artery is indeterminate and must be adjusted for each patient, but hardly less than 500 cc. should be considered. Even after introduction of 100 cc. of blood the pulse and blood pressure will show a response, but the transfusion should be not discontinued at this point. It is a good rule to continue intra-arterial transfusion until the hemorrhage is arrested, when the intravenous route will suffice and simplify the management from this time forward. We have used from 1,000 to 7,500 cc. of blood by the intra-arterial route during an operation and know of no fixed limit.

When the transfusion is concluded, the needle is withdrawn but the artery is not tied. The bleeding from the vessel will be slight and easily controlled by a pressure bandage or a bit of gelfoam placed directly upon it. The skin has already been closed with clips or silk. In several (but not all), of our cases pulsation returned in the artery. In 1 patient a second arterial transfusion was performed for secondary hemorrhage at the same site after an eighteen-hour interval, with good vessel patency. Papper[8] had 2 cases in which rapid intravenous fluids in large volume led to elevated venous pressure, pulmonary congestion and failing circulation. Phlebotomy and small arterial transfusions remedied the situation quickly.

The venous pressure must not be disregarded. Lichtman[9] has recorded several cases of heart failure due to coronary occlusion, in which, later, he sustained pressure balance at about 100 mm. of mercury by gravity arterial transfusions.

Our experience warrants the statement that intra-arterial transfusions have a definite place in the treatment of acute massive or critical hemorrhage, irrespective of the cause, although in our cases the bleeding was predominantly uterine or gastroduodenal. When hypotension has reached such a low degree that it can be recorded only with difficulty, or the pulse is too feeble to be palpated, or the heart sounds are practically inaudible, one is dealing with a condition that needs intra-arterial transfusions; for it is then almost useless to attempt to stimulate the heart by intravenous transfusions.

The time lost in conveying blood from the venous system to the coronary arteries, even if this is possible, nullifies the resuscitating effect. We wish to repeat that time is an important element. The promptness with which the transfusion can be set in motion plays a major part in the success of this procedure, which will fail unless the equipment is kept in readiness and competent personnel can take over at a moment's notice.

We are satisfied that a simple technic that depends on gravity alone for infusing the blood will meet most clinical requirements and conserve much valuable time. It may be necessary to sacrifice some scientific observations in carrying on this rather simple procedure, but it is justified in the end. We do not desire to report cases in detail or abstract, as they follow a common pattern, but it can be said with complete candor that some of the results are little short of amazing. It has not been unusual to begin with a pulseless patient and restore the circulation to a quality that permits a gastric resection, returning the patient to his room with a pulse and pressure that would be considered satisfactory after a similar operation undisturbed by complications.

SUMMARY

The following indications for intra-arterial transfusions seem justified by our experience, limited though it is:

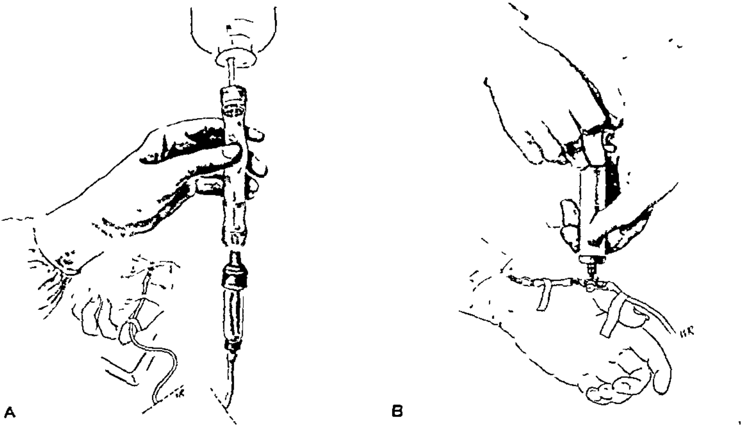

Fig. 4.—*A*, intra-arterial transfusion aided by plastic bulb. *B*, intra-arterial transfusion supplemented by syringe and three-way valve.

1. Severe hypotension of hemorrhage (for resuscitation)
2. Failure or ineffectiveness of intravenous therapy
3. Failure of the right side of the heart, as in pulmonary congestion or coronary occlusion
4. Certain types of arterial or cardiac surgical intervention, such as operations for coarctation of the aorta or mitral stenosis.
5. Conditions in which intravenous infusion is impossible (in these circumstances one should use the artery and not cut down on the vein).

Additional experience reported by others, as well as by ourselves, may modify or radically change the proposed indications as well as technic of the procedure.

Authors' Note: To Drs. John Andrina, Lewis M. Burdette, Paul Elsberg, Ejnar Johansen, Charles S. White, Jr., and Edward C. Wilson, Jr., we wish to acknowledge valuable assistance rendered in the preparation of the paper and in the application of the transfusions.

ZUSAMMENFASSUNG

Nach unseren Erfahrungen gibt es fuer die intraarterielle Transfusion gerechtfertigte, wenn auch begrenzte Indikationen. Die im folgenden aufgefuehrten Anzeigestellungen sowohl wie die Technik des Verfahrens werden mit dem Wachsen unserer eigenen und der Erfahrung anderer modifiziert und vielleicht sogar wesentlich geaendert werden muessen.

1. Schwere Blutdrucksenkung in Folge von Blutverlust (zur Wiederbelebung).
2. Versagen oder ungenuegende Wirksamkeit intravenoeser Behandlung.
3. Versagen des rechten Herzens wie bei Lungenstauung oder Kranzaderverschluss.
4. Gewisse Formen der Herz—oder Schlagaderchirurgie wie zum Beispiel Operationen an Faellen von Verengung der Aorta oder Mitralstenose.

Eine Beschreibung der Technik liegt vor.

RÉSUMÉ

Même si elle est limitée, notre expérience de la transfusion intra-artérielle nous permet de donner les indications suivantes—L'expérience des autres de même que celle que nous allons acquérir peut modifier ou même changer complètement les indications et notre technique.

1. Une hypotension grave après hémorragie (pour les ressucitations)
2. Le manque d'efficacité de la voie intra-veineuse
3. Le collapsus du coeur droit—comme la congestion pulmonaire et la thrombose coronaire
4. Durant certaines interventions sur le coeur telle que pour la coarctation de l'aorte ou la sténose mitrale.

Une description de la technique est présentée.

RESUMEN

Se enumeran a continuación las indicaciones para transfusiones intrarteriales que parecen justificadas por la experiencia de los autores, aun cuando esta es limitada. La experiencia adicional propia o ajena puede modificar o cambiar radicalmente las indicaciones que se proponen y la técnica del procedimiento.

1. Hipotensión grave por hemorragia (para resucitación).
2. Fracaso o inefectividad de la terapéutica intravenosa.
3. Falla del corazón derecho, congestión pulmonar u oclusión coronaria.
4. Ciertos tipos de intervención quirúrgica arterial o cardíaca, como las operaciones para coartación de la aorta o estenosis mitral.

Se presenta una descripción de la técnica.

RIASSUNTO

La nostra esperienza, per quanto limitata, sembra giustificare le indicazioni della trasfusione intra-arteriosa che qui di seguito elencheremo; ma non possiamo escludere che un'ulteriore esperienza, altrui o nostra, possa modificarle o cambiarle radicalmente assieme alle tecniche per la sua esecuzione

1 Stati ipotensivi gravi secondarii ad emorragia (a scopo di resuscitazione)

2 Insuccessi della terapia endovenosa

3 Stati di insufficienza del cuore destro, in casi di congestione polmonare o di occlusione coronarica

4 Certi interventi sul cuore o sui grossi vasi, come ad esempio operazioni per stenosi istmiche dell'aorta o per stenosi della mitrale

Viene fornita una descrizione della tecnica

SUMÁRIO

As seguintes indicações para transfusões intra arteriais parecem justificadas por nossa experiencia, embora limitada como e Experiencia adicional nas mãos de outros, bem como em nossas proprias, pode modificar ou alterar radicalmente as indicações propostas, bem como a tecnica do processo

1 Hipotensão grave de hemorragia (para resuscitação)

2 Fracasso da terapeutica intravenosa

3 Insuficiencia do coração direito, como na congestão pulmonar ou na *oclusão coronaria*

4 Certos tipos de intervencão cardiaca ou arterial, tais como as operações para coarctação da aorta ou estenose vitral

A descrição da tecnica e apresentada

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The Eighth International Assembly
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May 20-23, 1952

Cystic Torsion of Ovarian Pedicle in Infants and Children

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THIS paper is concerned with a problem in the abdominal surgical treatment of infants and children. Although not frequently encountered, this condition has a certain importance, not only because of the diagnostic indecisions associated therewith but because of its operative urgency.

Of the various types of tumor occurring in children, the majority of which are malignant, tumors of the ovary, according to Holt, constitute 1 per cent. In my own experience this figure is possibly even lower.

The rarity of ovarian tumors in children is paralleled by the rarity of their mention in medical and surgical literature. The report of Witzberger and Agerty in 1937, although well known among pediatric surgeons, has not lost its importance. These authors made a total review of the world literature, collecting 186 cases and afterward adding a few more. Kunstadter in 1950 reported the most recent case, in which the diagnosis was made four days after the child's birth and operation was performed on the thirtieth day of life. Schaeffer and Veprovsky in 1949 reported a statistical study of 10,413 gynecologic patients over a period of twelve years. Of 234 patients with ovarian tumors only 6 were girls, and only 1 of the 6 was under 13 years of age.

Of the total group of 4,514 surgical patients treated at this hospital from 1941 to the time of writing, only 4 had ovarian tumors. The diagnoses were made when the patients were referred to our service with acute or subacute abdominal symptoms requiring surgical intervention. The custom of this hospital is to perform necropsy in perhaps 75 per cent of cases when death has occurred, but not once in this long period have we encountered ovarian tumor at necropsy.

Classification.—Some working classification may perhaps be made of ovarian tumors, although, according to Curtis, it is impossible to make a histogenic classification of the ovarian tumors unless one resorts to theoretic bases, as has been done very skillfully by Schiller. A satisfactory clinical or pathologic classification is also difficult, as the multiplicity of elements forming the structure of the ovary give rise to so many varying opinions that it seems impossible to clarify the subject on a histologic or an embryologic basis. Despite these opinions, however, some one classification must be adopted for the purpose of instruction, and of those which have been offered I am disposed to favor Novack's, which is as follows:

Benign Tumors (cysts)

Non-neoplastic tumors	Neoplastic or Proliferative tumors
Follicular cysts	Pseudomucinous cystadenoma
Cysts of corpus luteum	Fibroadenoma
Inclusion cysts	Cystoadenoifibroma
Endomentrial cysts	Dermoid cysts

As has been mentioned, the literature on ovarian tumors in children is not abundant, but the majority of the authors who have studied the subject affirm that the malignant types are predominant. In almost all cases the onset is asymptomatic and the growth disproportionate, as is sometimes observed with teratomas. During the period mentioned we encountered benign neoplasms in only 4 cases. The lesions were serous cysts of which the parents, and consequently the doctors attending the girls, were unaware. One of the lesions belonged to the type called by some authors "single cysts", but all were

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serous. In 2 of these cases studies were made by the pathologist. In 1 of the patients, a girl 6 months old, the entire ovary was *transformed into a cystic* cavity with serous content and reaching the size of a small orange. In the other patient the cyst resembled those observed in older persons and had the dimensions of the head of a newborn child. Only 1 was multilocular. Also, in only 1 case was it possible to eradicate the tumor with preservation of any part of the gland. In this case the cystic degeneration was partial.

The lesions have been unilateral, those on the right side predominating, as is usual. One patient was not operated on, the parents' permission having been refused.

To the time of writing we have encountered only 4 benign ovarian tumors.

Our surgical service receives only patients up to *12 years of age* and accordingly, we must bear this limit in mind with regard to all phases of the surgical treatment of children. It has been said that ovarian neoplasms occur most frequently at the extremes of age and during the periods when sexual activity is most intense. Nevertheless, as Ladd has stated, these neoplasms may occur at any time, though the majority of authors are in full agreement that their appearance in children less than 1 year old is rare, but their presence in infants and the newborn is certainly not impossible. Neikirk and Hudson in 1948 reported favorable results after extirpation of a cyst in a girl 4 days old who was brought to the hospital with pseudointestinal obstruction. Our little patients were respectively 6 months, 3½ years, 9 years and 11 years of age; all are alive. The child most recently operated upon is shown in the accompanying illustration. As a rule, ovarian neoplasms pursue a torpid evolution, especially those which are benign, as are the majority of the serous cysts; all are discovered incidentally during examination for another condition. At the time of admission to the hospital the picture is that of an abdominal disease; this was true of 3 of our patients. As Reviralta has stated, the diagnosis is commonly made because of a torsion of the pedicle or rupture of the cyst. *The last mentioned accident is more* dangerous but fortunately less frequent. However, the subacute evolution of the tumor in 1 case permitted us to make some investigations, such as the taking of roentgenograms, which may be justifiably omitted in a case of acute involvement.

Of the 3 patients we have operated on, 2 presented torsion of the pedicle and 1, who had a prolonged history of more or less diffuse abdominal pains, presented incomplete torsion of the pedicle, an observation in accordance with the subacute character of the symptoms as recorded in her clinical history.

The diagnosis of torsion of an ovarian pedicle in a girl is not always easy, especially when the patient is an infant. In the elder patient this torsion simulates the pathologic picture of appendicitis, being more or less acute and sometimes having an atypical location. Therefore, when a girl complains of acute abdominal pain one naturally thinks of appendicitis. This doubtless explains much of the confusion in diagnosis.

When the cyst is small it is often overlooked until its presence is revealed by medical examination for some other condition or by the appearance of acute symptoms or complications, which nearly always indicates torsion of the pedicle. Severe and increasing abdominal pain is characteristic, with constantly diminishing periods of remission. In addition to this pain, 2 of our patients had pear-shaped hypogastric tumors that were intensely painful to palpation and evidently tended to increase in bulk toward their longer axes; this increase was remarkably progressive, suggesting the advance of a pregnant uterus toward the navel. Vomiting was invariably present, as it is a common ailment of childhood and becomes inevitable when the passage of excrements through the anus is interrupted.

Finally, confusion between torsion of the pedicle and intestinal obstruction is

Patient in Case 4.

not rare, especially in the case of an infant, since one is inclined to think first of the obstructive picture more frequently seen at this age, that is, intussusception. Our little patient 6 months old presented such extreme abdominal distention that from our first sight of her we were inclined to make a diagnosis of intestinal obstruction of some duration. Our diagnostic assumption was supported by the fact that a small tumor was present, more or less resistant, and so deeply situated that we thought it the classic "budin." Since the process had already existed for some time, we still mistook the condition for "loose intussusception". At the time of onset there was some excrement, and rectal palpation failed to reveal any positive results with the passage of time.

We have not encountered any postoperative complications even with this infant, who for some days before entering the hospital had been suffering with serous bronchopneumonia.

REPORT OF CASES

Case 1.—Rosa E., a mestiza 9 years old, was admitted to the hospital on Oct. 16, 1941. The provisional diagnosis was abdominal tumor.

The family history was noncontributory. The child herself had a history of constipation.

One week prior to admission there had occurred bouts of abdominal pain, diffuse but sometimes predominant in the left side and occasionally radiating to the lumbar fossa. These attacks were followed by bilious vomiting and occurred at intervals all day. The symptoms subsided and the child remained well until four days before her entrance to our service, complaining only of her usual constipation. The painful bouts then recurred, accompanied with vomiting, and this time we detected the presence of a hypogastric tumor, pear-shaped and painful to palpation. The pain became progressively more severe, and the tumor increased noticeably in bulk in the direction of its long axis.

Physical Examination.—In the hypogastrium and part of the left inguinal fossa a tumor the size of an orange, but not as hard, was palpated, and it was evident that it was increasing progressively in bulk and becoming more pear-shaped. It was possible to insert the examining hand between the tumor and the superior border of the symphisis pubis. The tumor was movable, but its displacement incited pain.

Roentgen Examination.—Both lateral and anteroposterior films revealed a lack of filling at the point of union of the left side of the colon and the sigmoid flexure, owing to compression by the tumor.

Operation.—On November 5, after a left infraumbilical and paramedian laparotomy, a multilocular ovarian cyst the size of a fetal head was observed in the left ovary. The tumor was eradicated without difficulty. It resembled a serous cyst, with torsion of the pedicle to the extent of 180 degrees.

Case 2.—Nelly R., a white girl aged 3½ years, was admitted to the hospital on July 14, 1946. The provisional diagnosis was cyst with torsion of the pedicle. The definitive diagnosis was the same.

The family and personal data were unimportant.

The patient was brought to the surgical service at 8 p.m., after five hours during which she had suffered with severe abdominal pain localized principally in the hypogastric region and the right iliac fossa. In the morning of the day of onset and during the first hours of the afternoon she had remained quite well and able to play. From its initial onset the pain was extremely severe, and it was only three hours before her admission to the hospital that her family physician noticed a tumor. This was localized in the hypogastric region and exceedingly painful to palpation.

Physical Examination.—On simple inspection we noticed a prominent deformity of the hypogastric zone, suggesting the presence of a deeply localized tumor. The elevation was pear-shaped, being wider at its upper extremity and reaching the navel. Palpation was exceedingly painful, the tumor could not be displaced without increasing the pain

Operation—On July 14 laparotomy was performed, revealing a cystic, violet-colored tumor, movable and localized in the right ovary, half of which was normal in microscopic appearance The tumor was eradicated with preservation of the ovarian segment that was outwardly sound There was torsion of the pedicle to the extent of three turnings The pathologist stated that the tumor corresponded to a serous cyst of the ovary

CASE 3—Ana E, a mestiza aged 11, was admitted to the hospital on Nov 17, 1948 The provisional diagnosis was ovarian cyst The definitive diagnosis was the same

The family history was irrelevant The patient had not yet menstruated, but had already had sexual intercourse

Seven days prior to admission the patient's mother had observed the presence of a tumor in the girl's abdomen The patient herself stated that she had noticed abdominal pains for four weeks There had been no nausea, vomiting or fever, but she had observed a loss of appetite and weight She had a tendency to constipation

Physical Examination—On simple inspection we noticed a round tumor in the hypogastric region, reaching the navel and giving the exact impression of a pregnant uterus after five months gestation Palpation confirmed the usual observations There was a rounded, smooth, soft tumor, painless and scarcely movable Vaginal examination was easily performed and disclosed a small uterine cervix, delimitable from the rest of the uterus, also it was possible to put in evidence a renitent tumor mass adherent to the right border of the uterus

This patient was not operated on, her family refusing consent

CASE 4—Zoila I, a girl 6 months old, was admitted to the hospital on Dec 5, 1950 The provisional diagnosis was intussusception The definitive diagnosis was torsion of an ovarian cyst pedicle and umbilical hernia

The family history was noncontributory The patient had had toxicosis, chronic bronchitis and bronchopneumonia

Six days before admission and six days after a severe attack of bronchopneumonia, the child had five to seven bouts of generalized convulsions Furthermore, she was excited, crying constantly, day and night, the periods of calm grew successively shorter, and since the beginning of the process the abdomen had been distended, especially the upper portion At first the anus was patent for gas and small amounts of feces Relatives stated also that from the beginning there had been noticeable peristalsis over the upper part of the abdomen The abdominal distention accentuated the congenital umbilical hernia

Physical Examination—This was difficult, the painful crises being severe and almost without intermission, nevertheless it was possible to detect a certain elastic resistance near the navel, suggestive of a deep-lying bland tumor Rectal examination gave negative results

Operation—On December 5 a right infraumbilical laparotomy was performed When the peritoneum was opened we observed a cystic blue violet tumor the size of a small orange, corresponding to a cyst of the right ovary with total cystic degeneration of the gland, the pedicle had made a complete turn but once the tumor was untwisted the color returned to normal Total eradication of the cyst was performed, involving the other extreme of the tube

The pathologist, Dr Voissest, described the specimen as nacreous-white, superficially wrinkled by numerous vessels and exuding clear serous liquid when cut The inner surface was smooth and showed the same characteristics as the outer surface, at the level of the pedicle there was an enlargement formed by vessels Microscopically it was possible to see that the cyst wall was formed by fibrous connective tissue wrinkled by the vessels of the thickened mass, the inner surface was covered by epithelium The pathologic diagnosis was serous cyst of the ovary

SUMMARY

The author presents 4 cases of torsion of the ovarian pedicle treated during the period of ten years that ended in 1950 and encountered among 4,514 general surgical cases He points out the rarity of this condition in children, that is to say, its rarity in the confused clinical picture of acute abdominal disease In his surgical service only children up to 12 years of age are received Among the few patients with ovarian cysts, the majority of whom presented the syndrome of acute abdominal disease, there was a girl 6 months

old. This article is primarily a surgical nosographic study.

CONCLUSIONS

1. Ovarian cysts and neoplasms generally are exceptional in girls, especially during infancy.
2. In the author's statistics, covering ten years during which he has had 4,514 surgical patients, he has encountered only 4 cases of ovarian tumor, in all of which the tumors were cystic.
3. Because of the rarity of this condition, the diagnosis is sometimes difficult, especially in the case of an infant.
4. As a rule the diagnosis is accidental; it is generally made owing to an acute accident, e.g., torsion of the pedicle.
5. In the infant as in the elder girl, torsion of the pedicle often simulates intestinal obstruction. In the infant it may suggest intussusception.
6. In children, especially when the tumor's course is subacute, the author has even suspected appendicitis.
7. Surgical intervention is mandatory, not only for patients with acute complications but for those few in whom the neoplasm has a progressive tendency to increase in bulk and there is possibility of malignant change.
8. Despite its rarity, the ovarian tumor is generally malignant.
9. Early age does not contraindicate surgical intervention, as there have been cases in which the operation was performed with success four days after birth.

RÉSUMÉ ET CONCLUSIONS

1. Les kystes et les néoplasmes de l'ovaire sont très rares chez les petites-filles, surtout les bébés.
2. Les statistiques de l'auteur couvrant une période de dix années et comprenant 4,514 patientes opérées montrent qu'il y a eu seulement 4 cas de tumeur ovarienne qui étaient des kystes.
3. A cause de sa rareté, le diagnostic est difficile surtout pour les cas des tout jeunes enfants.
4. De règle, le diagnostic est accidentel —lors d'un accident v.g. la torsion du pédicule.
5. Chez le bébé comme chez la petite fille, la torsion du pédicule simule souvent l'obstruction intestinale, chez le bébé on pense à l'invagination.
6. Pendant l'enfance, avec d es symptômes flous, on peut penser à de l'appendicite.
7. Le traitement chirurgical s'impose non seulement chez les complications aigues, mais aussi chez ceux où la tumeur augmente de volume et peut se transformer en malignité.
8. Même si elle est rare, la tumeur de l'ovaire est habituellement maligne.
9. Le très bas âge ne contreindique pas nécessairement l'intervention chirurgicale, puisqu'on rapporte des cas d'enfants de quatre jours.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

1. Zysten und Neubildungen der Eierstoecke kommen bei Maedchen und besonders im Saeuglingsalter im allgemeinen nur ausnahmsweise vor.
2. Der Verfasser hat an seinem Krankengut, das 4514 chirurgische Faelle umfasst, innerhalb von 10 Jahren nur 4 Patientinnen mit Eierstocksgeschwuelsten, die alle zystisch waren, beobachtet.
3. Wegen der Seltenheit der Erkrankung ist die Diagnose, besonders wenn es sich um einen Saeugling handelt, manchmal schwierig.
4. Gewoehnlich handelt es sich um eine Zufallsdiagnose, die gelegentlich eines akuten Zwischenfalls, zum Beispiel einer Stieldrehung, zustande kommt.
5. Das Krankheitsbild der Stieldrehung aehnelt beim Saeugling sowohl als auch beim aelteren Maedchen haeufig dem des Darmverschlusses. Beim Saeugling kann es an den Zustand der Teleskopierung des Darmes erinnern.
6. Bei Patientinnen im Kindesalter hat der Verfasser, besonders wenn die Anfaelle leicht waren, sogar Verdacht auf Blinddarmentzuendung gehabt.
7. Chirurgisches Eingreifen ist uner-

laesslich nicht nur bei Kranken mit akuten Komplikationen sondern auch bei den wenigen, die eine Neigung zu fortschreitendem Wachstum der Geschwulstmasse aufweisen, und wo die Moeglichkeit boesartiger Veraenderungen besteht.

8. Die Eierstocksgeschwulst kommt zwar selten vor, ist aber im allgemeinen boesartiger Natur.

9. Das fruehe Lebensalter stellt keine Gegenindikation fuer den chirurgischen Eingriff dar. Es gibt Faelle, in denen die Operation 4 Tage nach der Geburt erfolgreich durchgefuehrt wurde.

SUMÁRIO E CONCLUSOES

1. Cistos ováricos e neoplasmas são excepcionais em meninas, especialmente durante a infancia.
2. Na estatistica do autôr, referente a 10 anos, durante os quais ele teve 4,514 pacientes cirurgicos, ele encontrou somente 4 casos de tumores ovaricos, sendo que em todos eles os tumores eram cisticos.
3. Devido a raridade da condição o diagnostico é muitas vezes dificil, especialmente no caso de criança.
4. O diagnostico é, via de regra, acidental; é feito em face de acidente agudo, como por exemplo, torsão do pediculo.
5. Na criança, como na menina mais idósa, a torsão do pediculo muitas vezes simúla obstrução intestinal. Na criança póde sugerir intussuscepção.
6. Durante a infancia, especialmente quando os acidentes são subtis, o autor tem, as vezes, suspeitado apendicite.
7. A intervenção cirurgica é obrigatoria, não somente para pacientes com complicações agudas mas para aqueles poucos nos quais a neoplasma tem uma progressiva tendencia a aumentar em volume e onde existe a possibilidade de transformação maligna.
8. A despeito de sua raridade o tumôr ovarico é geralmente maligno.
9. Idade precóce não contraindica intervenção cirurgica, pois tem havido casos nos quais a operação foi executada com sucesso quatro dias depois do nascimento.

RESUMEN Y CONCLUSIONES

1. Quistes y neoplasmas ováricos son generalmente excepcionales en muchachas, especialmente durante la infancia.
2. En la estadística del autor, que abarca 10 años con 4,514 pacientes quirúrgicos, se encuentran sólo 4 casos de tumores ováricos, todos quísticos.
3. Debido a la mencionada rareza, el diagnóstico es a veces difícil, especialmente en tratándose de una infante.
4. Regularmente el diagnóstico es accidental, teniendo lugar por un accidente agudo, v. g. torsión del pedículo.
5. La torsión del pedículo simula frecuentemente obstrucción intestinal, tanto en la infante como en la muchacha de mayor edad, pudiendo en la primera sugerir intususcepción.
6. El autor ha sospechado asimismo apendicitis durante la niñez, especialmente cuando los accidentes son ligeros.
7. La intervención quirúrgica es imperativa no sólo en casos con complicaciones agudas, sino en aquellos pocos en los que el neoplasma tiene una progresiva tendencia al aumento de volumen y existe la posibilidad de un cambio maligno.
8. El tumor ovárico es generalmente maligno, a pesar de su rareza.
9. La edad temprana no contraindica la intervención quirúrgica, pues han habido casos en los que la operación se efectuó con éxito 4 días después del nacimiento.

CONCLUSIONI RIASSUNTIVE

1. Le cisti e le neoplasie dell'ovaio costituiscono un reperto eccezionale nelle giovani età, specie nell'infanzia.
2. In 10 anni e su 4.514 pazienti chirurgici, l'A. ha osservato soltanto 4 casi di tumori dell'ovaio, ognuno dei quali era cistico.
3. Data la rarità di tale malattia, la diagnosi ne è talvolta difficile, specie se si tratti di bambine.
4. Di solito la diagnosi è casuale, sopratutto in occasione di una complica-

zione—com'è, per esempio, la torsione del peduncolo.

5. Nelle bambine e nelle giovanette la torsione del peduncolo spesso simula un'occlusione intestinale—tanto che, nelle bambine, può venir fatto di pensare all'invaginazione.

6. Durante l'infanzia, specialmente in casi a insorgenza acuta, l'A. pensò a sindromi appendicolari.

7. L'intervento è non solo indicato nelle pazienti con complicazioni acute, ma anche in quelle poche in cui il tumore aumenta progressivamente di volume e v'è la possibilità di metaplasia maligna.

8. Malgrado la sua rarità il tumore ovarico in genere è maligno.

9. La tenera età non deve controindicare l'intervento perchè si conoscono casi in cui esso fu eseguito con successo a quattro giorni dalla nascita.

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To Our Contributors Abroad

We regret to announce that under current publishing conditions it has become impossible for the *Journal* to arrange the translation into English of original articles submitted in other languages. With the single exception of articles written specifically for the *Seccion en Espanol,* which, of course, do not require translation, we must therefore request that all articles henceforward be submitted in the English language. Prompt publication can be greatly facilitated if all manuscripts are typed in double or triple space to allow room for editorial corrections. Your cooperation will be deeply appreciated.

Retroperitoneal Cysts and Tumors

MARTIN NORDLAND, M D, AND MARTIN A NORDLAND, M D

MINNEAPOLIS

THE designation "true retroperitoneal tumor" is restricted by some pathologists to a tumor that is primary in the retroperitoneal space or in retroperitoneal tissue Although the occurrence of solid or cystic tumors in the retroperitoneal spaces may be more common than has been supposed, they are looked upon as unique in the experience of the average surgeon This is accounted for by (1) the unusual clinical picture in many cases, (2) the confusion that exists in their pathologic identification and (3) the difficulty encountered in their surgical removal Discussion of this subject must include tumors of the pancreas, kidney, adrenal gland, lymph nodes and mesentery

The literature concerning retroperitoneal tumors is mainly concerned with descriptions of the various types encountered, without a satisfactory explanation of their origin Rankin and Major stated that a certain number of these growths depend for their origin on congenital defects in the development of the mesentery In their opinion it is conceivable, from an embryologic standpoint, that remnants of the wolffian or mullerian ducts or segregated remnants of the genital gland can become lodged within the mesentery and that portions of these embryonic structures may migrate into the retroperitoneal tissues to invade the mesentery of the bowel, thus acting as nuclei of mesenteric tumors in postnatal life Trauma as an etiologic factor is conspicuously lacking in their review of 22 cases of primary mesenteric tumor, although 2 of the tumors reported by them were of the cystic sanguineous type In 1 of our cases of mesenteric cyst, trauma of some sort no doubt was the cause of hemorrhage into the mesentery of the ileum, resulting in the formation of a hematoma and a secondary cyst

A great variety of tissues is found in tumors of the retroperitoneal space Consequently, pathologists find it difficult to agree as to the true nature of such diverse structures In Hart's opinion this is not surprising when one considers the structure of the mesentery He has pointed out that primarily it is a sheet of mesenchyme covered on both sides with mesothelium or endothelium, and from the mesenchyme are derived all of the fibrous connective tissues of the body Running throughout this complex structure are nerve fibers, blood and lymph vessels and lymph nodes, any one of which may become the site of neoplastic formation

The lack of knowledge concerning the pathogenesis of various tumors of the retroperitoneal spaces accounts for the variations in classification Peterson has classified the cysts as follows

1 Cysts of intestinal origin, developing (a) by sequestration from the bowel during its development, or (b) from Meckel's diverticula arising on the concave side in an intramesenteric position
2 Dermoid cysts
3 Cysts arising retroperitoneally from the wolffian body or the mullerian duct

The consensus is that the ratio of occurrence of cysts to that of solid tumors is about 2 1

In the consideration of a solid tumor, one is chiefly concerned as to whether the tumor is benign or malignant It has been observed that the majority of solid tumors of the retroperitoneal spaces are benign or of a low grade of malignancy and that metastases, with few exceptions, do not occur early Hertzler expressed agreement with the view that these tumors, even the pure lipomas, are to be regarded as embryonal in origin and not

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merely as reversions of adult tissue to the embryonal type. It has frequently been observed that areas of myoid tissue, which is a primitive tissue closely related to sarcoma and often associated with it, have been observed in tumors classified as lipomas. Recurrence has frequently been observed after surgical removal of retroperitoneal tumors which were apparently lipomas or connective tissue tumors. Baxter has pointed out that from a practical standpoint it is important to consider all of these tumors malignant, either by reason of their inherent structure or on account of their widespread extensions around important structures. He called attention to the fact that the name "lipoma" arouses in the mind of the surgeon a feeling of confidence and mastery of the situation which is likely to be severely shaken when he encounters a lipoma of the retroperitoneal space. Bowers stated that, of the solid tumors of the retroperitoneal space, lipomas are the most numerous and fibromas the rarest. In the order of frequency, the consensus seems to be that lipomas come first, fibromas second and fibrosarcomas third, and that lymphosarcomas are the least common of all.

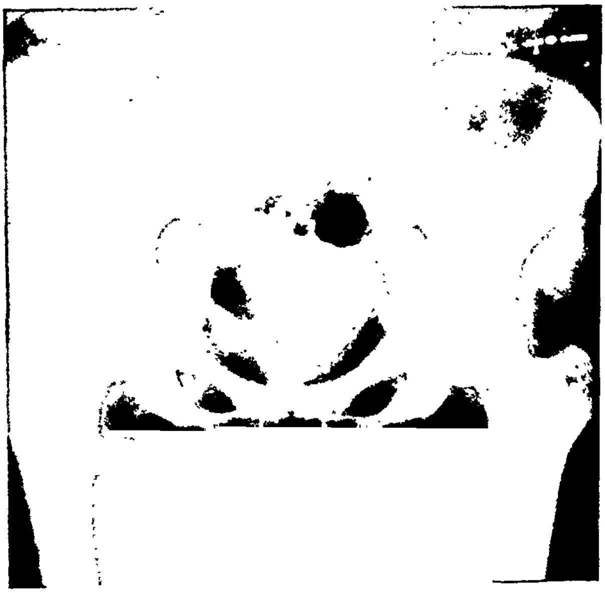

Fig. 1.—Retroperitoneal pelvic dermoid.

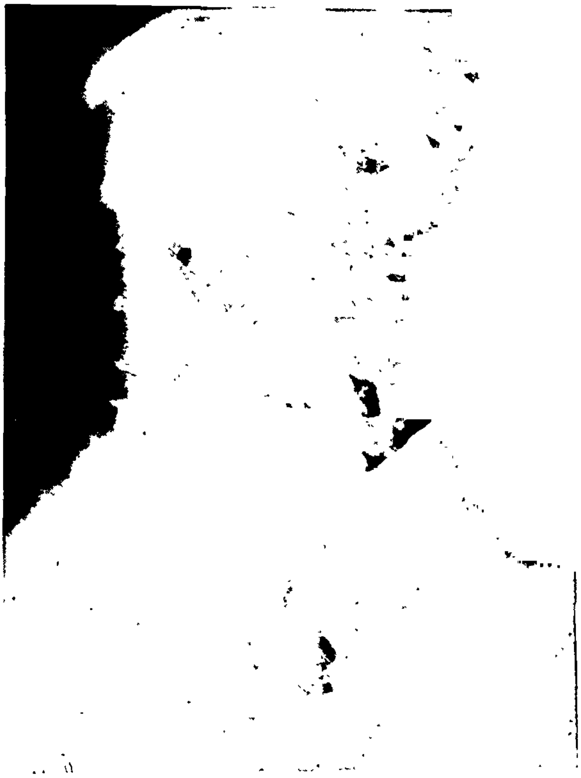

Fig. 2.—Roentgenogram showing partially calcified mass in large retroperitoneal cyst, extrinsic to kidney.

According to Szenes, the site of the sarcomatous tumors is the mesentery of the small intestine in two-thirds of all the cases, the greatest number occurring in the mesentery of the terminal portion of the ileum. The mesentery of the jejunum, the cecum, the appendix or any part of the mesentery of the colon may, however, be the site of a retroperitoneal tumor.

Naturally, because of their complex structure, these tumors have received various designations. Malignant tumors are often classified as: (1) fibrosarcoma; (2) neurosarcoma; (3) liposarcoma; (4) myosarcoma, and (5) lymphosarcoma. They could be grouped under one general name, for each contains fibrous and fatty tissue, in different proportions and with more or less malignant degeneration. It is very often difficult to distinguish those of the malignant group from Hodgkin's disease.

There are no pathognomonic symptoms and signs of retroperitoneal tumors or cysts. Some patients with retroperitoneal tumors present few if any symptoms. The size and location of the tumor, together with its mobility, naturally determines many of the symptoms. Even a large tumor may be relatively symptomless, causing only a slight sense of "pressure and crowding." In other patients with retroperitoneal tumors, abdominal symptoms of variable intensity, ranging from simple indigestion to acute surgical conditions of the abdomen, may be present. Large cysts may be the cause of acute obstruction of the bowel. Chronic obstruction of the bowel may result from these tumors, and the symptoms of appendical abscess may be present if an infected cyst is present in the right lower abdominal quadrant. Again, a tumor in the mesentery of the ileocecal region may simulate the symptoms of a twisted ovarian pedicle. When the retroperitoneal tumor is near the kidney, the symptoms of Dietl's crisis may occur. Painless swelling may be the first symptom when the tumor is benign, and cachexia and anemia may be the earliest to appear if it is malignant.

The diagnosis of retroperitoneal tumors is being made more frequently in recent years and should be made quite accurately when no acute symptoms are present. Naturally, the correct diagnosis is more readily made when the possibility of the condition is borne in mind. Cases of mesenteric or retroperitoneal tumor are on record, including one here reported, in which the operating surgeon did not recognize the true condition even with the abdomen open and the tumor before him. In many of these cases the abdomen has been closed and the tumor safely removed at a later date.

These tumors are most often confused with disturbances of the pancreas, spleen and kidneys; to make a positive diagnosis, therefore, it is necessary to exclude disturbances of the genitourinary tract, the biliary system, and the gastrointestinal tract as well as the [illegible] organs. Metasatic tumors, secondary tumors of the testicle, occur retroperitoneally and must be thought of. A careful examination of the female pelvis with the patient in the Trendelenburg position should exclude tumors of the female generative organs. In the cases in which acute symptoms occur, the patients often come to operation with a mistaken diagnosis of appendicitis. This is understandable when one remembers that the majority of the tumors occur in the region of the terminal portion of the ileum. However, the presence of an abdominal mass, movable from side to side and not movable in the vertical direction, with no intrinsic disease of the intra-abdominal viscera as demonstrated by roentgenologic examination, should suggest a retroperitoneal tumor.

The treatment of choice is surgical removal. If the tumor is benign, this is possible with only a slight mortality rate. Naturally, the safety of the operation depends on the size and location of the tumor as well as the condition of the patient. Even a benign tumor, because of

lower p [illegible] f right kidney.
[illegible] cyst (Fig. 2).

its size or its attachment to blood vessels, ureters, intestines or other structures, may be extremely hazardous or impossible to excise (Fig. 6). When excision is possible, whether the tumor is benign or malignant, wide resection is imperative because of the marked tendency of these neoplasms to local recurrence. This is true particularly if the lesion contains any myxomatous structure, since material of this kind is especially prone to adhere to anything with which it comes into contact. It is also important to search for and to remove all smaller nodules which may be and occasionally are present alongside the main tumor mass. The removal of a tumor, together with resection of the attached intestine, is a major procedure and carries a high mortality rate.

Except when they are encapsulated, malignant tumors of the retroperitoneal spaces are usually inoperable, and the prognosis in these cases, as with malignant disease elsewhere, is not good. When removal is not possible (Fig. 7), roentgen therapy offers hope of palliation and possible cure, depending on the degree of malignancy of the tumor. In all cases of inoperable tumors of the retroperitoneal spaces enough tissue should be removed during exploratory laparotomy for adequate microscopic diagnosis.

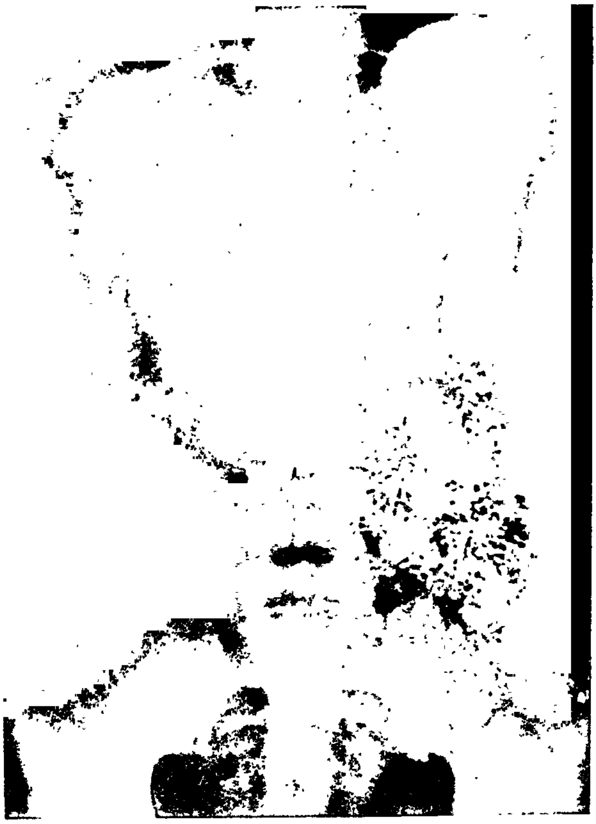

Fig. 4.—Traumatic pancreatic cyst. Note similarity to lymphoblastoma (Fig. 7).

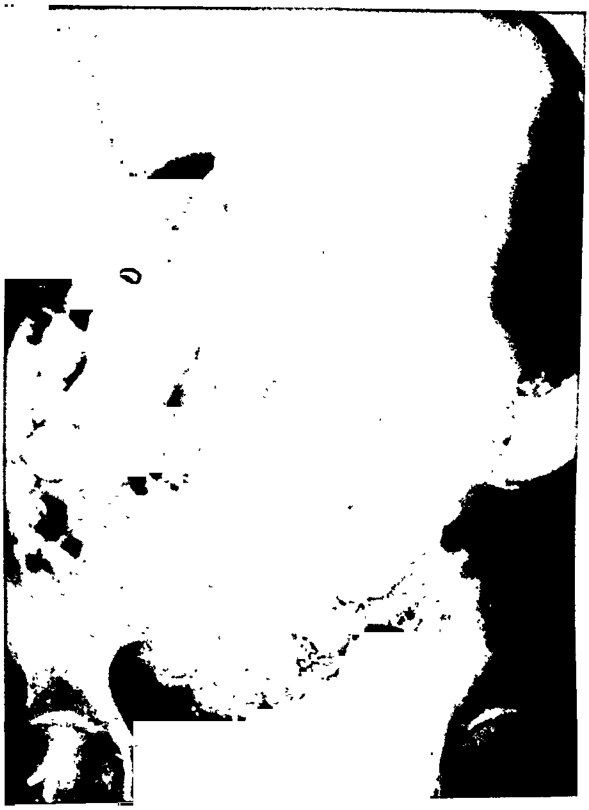

Fig. 5.—Adenocarcinoma. Note displacement of stomach.

The cases here presented illustrate the rather unusual clinical picture encountered and the hazards involved in surgical removal of the tumors. They also emphasize the variation of pathologic picture.

Retroperitoneal Dermoid Cyst (Fig. 1). —The first case to be reported illustrates one of the major group in the Peterson classification. The cyst, extending into the pelvis, was first recognized as a complication of obstetrical delivery. It has been suggested that the tumor might be classified as an epidermoid

Mrs C A, 28 years of age, complained of drainage from two fistulous openings high in the perineum, near the left side of the vaginal outlet, present since delivery of a child four months earlier She related that a "protruding tumor" containing more than a liter of material resembling toothpaste had been drained to permit delivery Roentgen studies after injection of the sinus with an opaque material demonstrated the presence of a large cyst anterior to the coccyx and sacrum and extending into the lower left quadrant of the abdomen

The fistulous tract was dissected from below upward Because it was impossible to get the highest portion of the sac from this approach, the operation was finished through an opening in the abdomen, the dissection exposing the left ureter and the femoral vessels The mass removed was the size of a large fist The sac contained sebaceous and suppurative material and had a smooth lining

Microscopic sections showed that the walls of the cyst contained fibrous tissue, some of which was elastic It had a lining, round cells, plasma cells and pus Some points were covered with stratified squamous epithelium, with considerable chronic inflammation underneath

True Retroperitoneal Cyst (2 Cases) — There were 2 cases of true retroperitoneal cyst In the first case a cyst containing sanguinous fluid was present, with no definite history of trauma There was massive infiltration of blood on tissue examination, but no definite lining It was probably a cyst originating in the intestine by sequestration from the bowel during embryonal development

Mrs R M, 38 years of age, had noticed a mass in the lower part of the abdomen for three years before coming for examination She had had intermittent epigastric distress, which was not related to meals Increasing digestive disturbances and a marked increase in the size of the abdomen were the main symptoms prior to her admission to the hospital Roentgen and pelvic examinations gave negative results At operation a tense lobulated tumor 12 by 18 cm, with a cystic "feel," was observed in the mesentery of the ileum The wall was ruptured during its removal, allowing a dark red fluid to escape, but the margins of the cystic wall were removed without interference with any of the large vessels Convalescence was uneventful A section for microscopic study, taken through the mass of tissue removed, showed massive infiltration with blood No definite cyst lining could be made out Recovery was without incident

H P, a man aged 21, was being examined for induction into the Army A diffuse mass filled the right side of the abdomen The patient had noticed this painless mass for several years without concern and had even played basketball and football in high school with no ill effects

Nothing of significance was noted in our examination of this healthy-looking young man, except a conspicuous bulging in the right lower quadrant of the abdomen Palpation revealed the presence of the mass, which extended into the right lumbar region and seemed to be about the size of a football The mass was firm and not tender and seemed fixed in its position

A roentgenogram of the abdomen showed a large, partially calcified mass extending from a level at the lower border of the liver to a point well down in the pelvis A series of roentgenograms and fluoroscopic examinations after the ingestion of a barium meal showed marked displacement of the descending portion of the duodenum by an extragastric mass A barium enema under fluoroscopic control and roentgenographic study showed the cecum displaced upward and toward the midline Roentgenograms taken of the urinary tract before and after administration of neo skiodan revealed that, except for upward displacement of the right kidney by a large calcified mass, the kidneys appeared normal The pyelogram was normal, and there was normal excretion of the dye The conclusion from evidence was in favor of a large retroperitoneal cyst or tumor (Fig 2)

When the abdomen was opened, all the viscera were observed to be widely displaced toward the midline by a bulging cystic mass Incision in the posterior parietal peritoneum exposed a lobulated cyst extending from the diaphragm to the true pelvis Long fingerlike projections spread widely in all directions from the central portion, where a large calcareous mass was easily palpated Dense adhesions to its surroundings accounted for occasional accidental openings in the sac during its removal A heavy gelatinous sub-

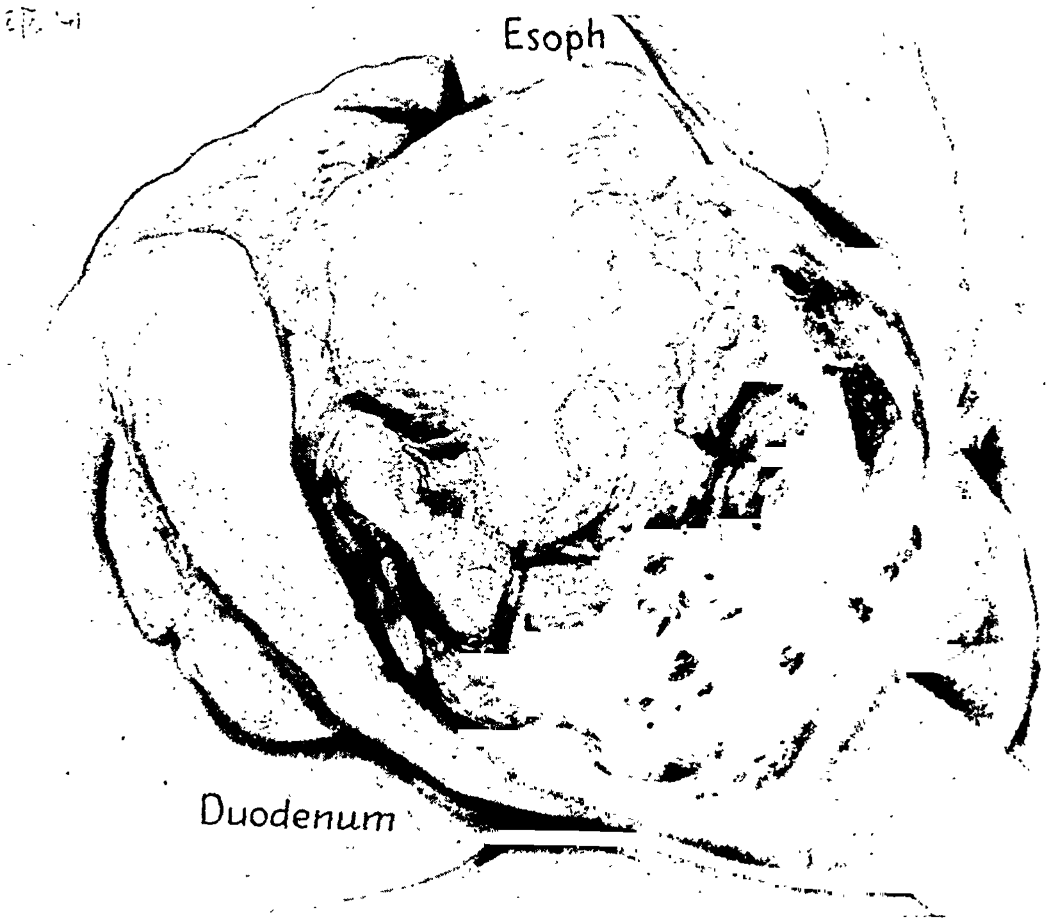

Fig. 6.—Retroperitoneal adenocarcinoma removed through mesentery of lesser curvature of the stomach.

stance, brownish and having the consistency of cold broth, escaped from the lower lobules. The content of the upper lobule was milky white, mucoid and tenacious. When the entire mass was removed, the iliac vessels, the vena cava, the right ureter, and the lower portion of the kidney and psoas muscle, as well as the arcuate fibers of the right side of the diaphragm, were exposed. Recovery was rapid and uneventful. The tumor in this case undoubtedly arose retroperitoneally from the wolffian body or the müllerian duct, a true retroperitoneal cyst.

Cysts of the kidney (Fig. 3) often simulate retroperitoneal tumors and must be considered in the differential diagnosis. Pancreatic cysts must also be excluded.

H. F., a youth aged 18, came to the office because of rapid development of a mass in the epigastrium. The history revealed that five months prior to admission he had been in an automobile accident and that a lump developed in the left upper abdominal quadrant soon thereafter. Two weeks before the patient came under our care this mass had developed very rapidly, causing gastric distress and a sense of crowding. The patient could not bend forward without belching, and he had considerable pain. Roentgen studies revealed "a large mass in the epigastrium, which displaces the stomach and duodenum around it, but is not causing any obstruction" (Fig. 4). Operation revealed a large pancreatic cyst aggravated by trauma.

This case again illustrates the difficulty of differential diagnosis. Note the similarity of the displacement of the stomach to that observed in the case of lymphosarcoma (Fig. 7).

Retroperitoneal Myxoleiomyoma.—The following case illustrates the bizarre structures these tumors may possess:

A. B., a man aged 26, came for examination because of prolonged persistent distress in the epigastric region, which at irregular intervals had been fairly severe This pain was not related to eating or to bowel function, nor was it associated with any symptoms referable to the genitourinary tract Relief was obtained only by the use of increasing amounts of various mild sedatives There had been a loss of a few pounds in weight, but this the patient attributed to worry and consequent poor appetite He had undergone thyroidectomy for exophthalmic goiter only six months previously His appearance was healthy Except for a hard rounded fixed mass in the upper two-thirds of the left side of the abdomen, there were no abnormal observations Roentgenographic and fluoroscopic study of the gastrointestinal tract showed the transverse colon displaced upward by the tumor, but otherwise gave no information as to the nature of the mass

Exploration through a left rectus incision disclosed a large lobulated tumor, situated retroperitoneally just below the ligament of Treitz It was fairly well encapsulated and was removed completely without breaking into the mass

On pathologic examination the specimen was described as an encapsulated tumor, 16 by 8 cm, composed of a soft, gelatinous looking yellowish pink material that oozed bloody serum In the center were two hard masses of tissue, each about the size of a walnut Microscopic study showed masses of involuntary muscle fibers with myxomatous degeneration The patient is still living and in good health The final diagnosis was myxoleiomyoma

This type of tumor with a myxomatous structure should be widely resected because of the marked tendency of these neoplasms to recur

Retroperitoneal Adenocarcinoma —The value of roentgenologic examination for the correct diagnosis of a retroperitoneal tumor and the difficulty and danger of its extirpation are revealed in the story of this case

Mrs M K, aged 68, was first seen on June 29, 1940 Her principal complaints were of an abdominal tumor, which seemed to be growing larger, loss of weight and extreme weakness She stated that she had noticed a mass in the abdomen in 1928, at which time she was seen by a surgeon At explor[illegible] laparotomy in June 1939 he decided that the tumor could not be removed, and closed the abdomen A punch biopsy made at operation was not satisfactory for a diagnosis and he thought he was dealing with an inoperable malignant tumor The patient's weight had fallen from 190 pounds (86 2 Kg) in 1938 to 142 pounds (64 4 Kg) in June 1940 Her health had always been good Recently warty freckles had developed on her abdomen Her appetite had been gradually decreasing, and she had been troubled with increasing constipation She stated that she felt as if her stomach could not hold as much food as it normally should

Physical examination gave essentially negative results except for the presence of a large nodular mass which could be seen filling the epigastrium There was no tenderness, but there was an uncomfortable feeling on pressure The pelvis was normal Operation was delayed three months by the patient During this time she lost more weight and the mass grew conspicuously, causing her increased

F 7 —Retroperitoneal lymphosarcoma Note [illegible] larity [illegible] st (Fig 4) discomfort. Roentgen examination of the gastrointestinal tract showed a large tumor displacing the stomach to the left and downward (Fig. 5). There were no intrinsic pathologic changes. On Sept. 28, 1940, the retroperitoneal tumor (Fig. 6) was removed and proved to weigh 5½ pounds 2,495 Gm.). On section it was firm and white. The microscopic diagnosis was adenocarcinoma, possibly of pancreatic origin. The patient was troubled with nausea and had frequent emesis for three weeks after the operation, at which time roentgen study showed definite evidence of partial obstruction in the outlet of the stomach due to localized duodenitis. Recovery from this was gradual and complete, and to date there has been no evidence of recurrence. Pancreatic function was normal before and has been normal since the operation.

Large Retroperitoneal Lymphoblastoma (Inoperable).—In the presence of an inoperable retroperitoneal tumor, enough tissue should be removed for a good biopsy.

Mrs. A. G., aged 72, had noticed a marked swelling of the abdomen for several months and had had vague gastrointestinal symptoms for a number of years. During the year before her admission to the hospital she frequently became nauseated, the attack occurring most often at night but later occurring during the day, without relation to time or to the nature of the food taken. Constipation became severe, and she complained of loss of weight and progressive weakness. A penetrating backache radiating to the left scapula kept her awake at night. Except for the abdomen and a mild hypertension, physical examination revealed no abnormality. A conspicuous bulging was seen in the epigastrium, and a mass was felt between the costal margin. The mass was dull on percussion and could be moved from side to side. Roentgenologic study excluded intrinsic gastrointestinal disturbance and showed marked upward displacement of the stomach and widening of the duodenal loops, obviously due to a retroperitoneal mass.

At operation, a firm nodular mass the size of a large fist was observed (Fig. 7) retroperitoneally, extending between the leaves of the mesocolon. It was firmly and widely attached. Because of the patient's age, the wide dense attachments of the tumor and a sudden drop of the blood pressure during manipulation, the thought of excision was abandoned and two pieces the size of walnuts were removed for biopsy.

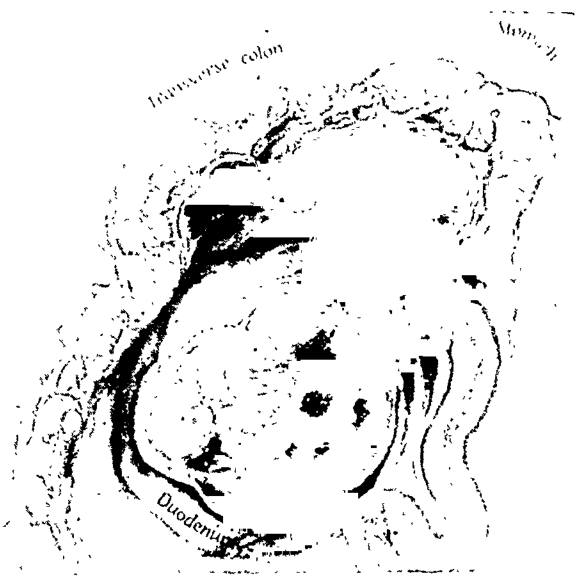

Fig. 8 (*Gaston*).—Inoperable retroperitoneal tumor exposed. Lymphoblastoma.

The microscopic diagnosis was malignant lymphoblastoma. The patient was given two series of high voltage roentgen therapy. Nine months after the exploratory operation, a gastrointestinal study revealed much less displacement of the stomach and duodenum, with the mass apparently much smaller than at the original examination.

This case illustrates the value of roentgen therapy for some inoperable tumors. The patient lived five years and died from pulmonary mestastases.

SUMMARY

The correct diagnosis of tumors of the retroperitoneal space is being made more frequently in recent years. As is demonstrated in the illustrations, the removal of these tumors is often difficult and hazardous. This is true whether or not the lesion is a true retroperitoneal mass. Roentgen films of the gastrointestinal and genitourinary tracts are essential in all such cases. Pathologically, the nature of these neoplasms varies within wide limits from that of simple benign lipoma, fibroma, myoma or myxoma, to that of the metaplastic, highly malignant sarcoma. When metastasis occurs, it involves most frequently the lungs, the liver and the regional lymph nodes The majority of these tumors are benign or of low malignancy with late metastases, and therefore successful surgical removal carries a favorable prognosis Whether the tumor removed was benign or malignant, the patient should be observed for years for recurrence These neoplasms are most frequently confused clinically with renal, splenic, hepatic or ovarian tumors or pancreatic lesions Roentgen therapy has an important place in the management of inoperable tumors

RIASSUNTO

In uno studio sulle cisti ed i tumori retroperitoneali gli AA riportano alcuni casi clinici e le varie classificazioni di tali condizioni patologiche

Sottolineano particolarmente tutto cio che riguarda la diagnosi, oggi posta correttamente con piu frequenza di un tempo

ZUSAMMENFASSUNG

Die Verfasser legen ein Studium retroperitonealer Zysten und Geschwuelste und Klassifizierungen vor Die Arbeit enthaelt erlaeuternde Krankenberichte und unterstreicht die Wichtigkeit der Diagnose, die heute haeufiger als frueher gestellt wird

SUMÁRIO

Os autôres apresentam um estudo de cistos e tumôres retroperitoniais com classificações Observações de casos ilustrativos são incluidas e o diagnostico e realçado, o qual e feito agóra mais frequentemente do que antes

RESUMÉ

L'auteur etudie la classification des kystes et des tumeurs rétroperitoneales avec des cas a l'appui, le diagnostic est decrit plus en detail puisqu'il se fait maintenant plus facilement

RESUMEN

Los autores presentan un estudio con clasificaciones de los quistes y tumores retroperitoneales Se incluyen comunicaciones sobre caso ilustrativo, insistiéndose sobre el diagnostico, que se hace con mayor frecuencia que anteriormente

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Postoperative Esophagitis Requiring Surgical Treatment

MAJOR THOMAS H. HEWLETT, M.C., AND
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PHILADELPHIA

POSTOPERATIVE esophagitis is probably not a rare complication of abdominal surgical procedures, particularly in patients requiring prolonged use of tubes of the Levine or Miller-Abbott type. Fortunately the procss is usually self-limited and does not demand specific treatment after removal of the tube. The few symptoms manifested by some of these patients are insufficient to direct the attention of the surgeon to the esophagus. Consequently, reports in the literature are concerned with patients in whose cases esophagitis becomes a major problem.

Descriptions of esophagitis in textbooks on pathology are limited primarily to lesions resulting from the ingestion of caustics, although it is interesting to note that Anderson[1] referred to a type of acute esophagitis which he considered terminal in aged, debilitated or seriously ill patients. Formerly these changes were accepted as the result of postmortem autolysis. It appears that the type of esophagitis which may become a major postoperative complication has not attracted wide attention from pathologists. Bockus[2] listed trauma, excessive vomiting and esophageal intubation among the causes of esophagitis. The same author implied that the incidence of esophagitis has increased with the more frequent use of gastric and intestinal intubation after abdominal operations. That chronic esophagitis may progress to actual stenosis must be accepted as factual. Benedict and Daland[3] in 1938 reported the case of a 56-year-old man who was readmitted to the hospital three and one-half months after gastric resection, complaining of inability to swallow anything except water and ginger ale. An esophagogram revealed almost complete obstruction of the distal third of the esophagus, in which the lumen was reduced to a fine tube for a distance of 5 cm. The upper margin of the defect was cone-shaped and the lateral margins fairly irregular. Esophagoscopic examination revealed esophagitis, and the patient responded to dilatations administered over a period of one month. Review of his previous admissions revealed that he had undergone subtotal gastric resection with a posterior Polya anastomosis for penetrating duodenal ulcer. Interval intubation with the Levine tube was performed twice daily from the fifth to the ninth postoperative day; the tube was left in place from the ninth to the eleventh day, and after the performance of enteroenterostomy further intubation was not done. It is known that a mild form of esophagitis may occur in patients suffering from peptic ulcer, and peptic ulcer of the esophagus is possibly more common than is generally supposed.[4]

Bartels[5] noted 82 instances of acute ulcerative esophagitis in 6,000 fresh and preserved specimens studied at the Mayo Clinic. Of the patients in this group, 55 died after an operation, 48 per cent having undergone surgical treatment of the stomach or biliary tract. In 20 patients the symptoms of esophagitis appeared within one to five days after the operation. The development of esophagitis did not seem directly related to the type of operation performed, but it was noted that the complication tended to appear in patients who were considered poor risks and who underwent difficult extensive operations.

Vomiting was a symptom in 71 per cent of the entire group studied. Since intubation was used in only one-third of the

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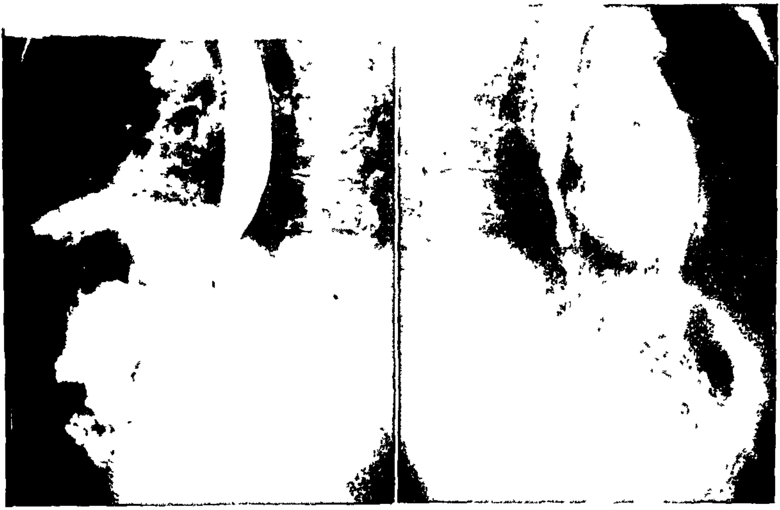
From the Surgical Service, Jewish Hospital, Philadelphia. Submitted for publication.



Left, preoperative roentgenogram showing constriction at esophagogastric juncture. *Right*, postoperative roentgenogram. The spasm at the esophagogastric juncture has been completely relieved.

cases and the lesions in this group did not differ basically from those occurring in patients not intubated, the author concluded that intubation was not an etiologic factor, though it may have been incidentally aggravating. The action of gastric juice on the esophagus of a debilitated patient undoubtedly contributes to the development of esophagitis.

Olsen[6] has stated that in his experience esophagitis most commonly occurs with duodenal ulcer, gallbladder disease or an abdominal disease that may cause regurgitation of gastric secretions.

Vinson and Botts,[7] reporting on a clinical study of 213 cases of esophagitis, concluded that the anatomic structure of the esophagus renders it vulnerable to organisms from the oral cavity when slight trauma is initiated by regurgitated gastric juice. In their series the incidence of gastric intubation and vomiting closely paralleled the occurrence of esophagitis. Seventy-one and nine-tenths per cent of the patients had postoperative esophagitis, the symptoms appearing twenty-four to forty-eight hours postoperatively and persisting for seven to ten days. Tabulation of the symptoms in this large group revealed burning and hematemesis to have been most common. Patients requiring specific treatment responded to esophageal dilatation.

That surgical intervention may be necessary to correct persistent narrowing of the esophagus is implied by several reports, although the general experience would indicate satisfactory response to repeated dilatations. It is recognized that cardiospasm in 10 to 30 per cent of cases does not respond to conservative measures, and corrective surgical treatment becomes necessary. Patients with cardiospasm and stenosing esophagitis require esophagogastrostomy, esophagocardioplasty or Heller's extramucous esophagocardiotomy to effect relief of the obstruction.

REPORT OF CASE

An unmarried woman aged 64 was admitted to the Jewish Hospital on April 1, 1949. Her chief complaint was of pain in the right upper quadrant of the abdomen. She stated that there had been repeated attacks referable to the right upper quadrant for the past twenty-five years. Two weeks before admission this became very severe, and the week just past had been marked by nausea and vomiting whenever food or drink was taken. One week before admission the patient noticed that the stools had become light and the urine dark, and that the skin was becoming yellow.

The social and family histories were noncontributory. The past medical history was irrelevant except for the fact that the patient had been treated for rheumatoid arthritis. The blood pressure on admissions in millimeters of mercury, was 100 systolic and 60 diastolic. The skin had a yellowish tinge. The patient weighed 90 pounds (41 Kg.). The sclerae were icteric; the tongue was furry and dry. Examination of the abdomen revealed exquisite tenderness of the right upper part of the abdomen and muscle guarding. An electrocardiogram revealed extra systoles but otherwise was within normal limits.

Laboratory Tests.—On admission, the sedimentation rate was 49 mm. in sixty minutes. The blood count showed 3,750,000 erythrocytes per cubic millimeter of blood, with 12.5 Gm. of hemoglobin; 13,000 leukocytes per cubic millimeter of blood, with 78 per cent polymorphonuclears. The urine was normal. The prothrombin time was 50 per cent of normal. The value for blood sugar was 102 mg. per hundred cubic centimeters; urea nitrogen, 10 mg.; van den Berch, 2.1 mg. Operation was performed on April 7, with spinal anesthesia. The peritoneal cavity was opened through a right rectus incision. The gallbladder was observed to be completely hidden in adhesions. The duodenum was closely adjacent and drawn toward the gallbladder by inflammatory adhesions. One stone was perforating into the duodenum, and duodenal contents could be expressed through a fistulous opening in its wall. Another stone from the gallbladder was perforating into the common bile duct producing a fistula between the two structures. The common duct was probed for stones, but none were found. A T tube was sutured into the common duct, the gallbladder was removed, and the fistulous tract into the duodenum was closed with atraumatic catgut sutures.[8]

Postoperatively, Levine tube suction drainage was employed for four days. Repeated episodes of vomiting, however, were noted until the patient was discharged on the twenty-first postoperative day. The amount of vomitus was usually small and of the regurgitant type. A cholangiogram made before discharge disclosed a normally patent common duct, and the T tube was removed.

Second Admission.—The patient was readmitted to the Jewish Hospital on May 23, forty-five days after the first operation. Her chief complaint was of vomiting. She stated that shortly after leaving the hospital she began to vomit immediately after eating; this postprandial vomiting had increased so that shortly after the ingestion of food she would gag and bring up a frothy white fluid, after which she would vomit undigested food. This vomiting was always preceded by a feeling of discomfort in the epigastrium, described as fullness rather than pain. There had been no hematemesis and on jaundice since her discharge from the hospital. Physical examination revealed the blood pressure in millimeters of mercury to be 140 systolic and 90 diastolic. The temperature was 98.4 F. The pulse rate and the respiratory rate were normal. Increased breath sounds were noted at both lung bases. The abdominal incision was well healed; no tenderness or guarding was observed. The patient appeared slightly dehydrated. A Levine tube could not be passed beyond 7 inches (17.7 cm.). Laboratory tests gave essentially normal results. Roentgenograms showed hypertrophic osteoarthritis of the cervical vertebrae. Further roentgen examination of the esophagus showed marked spasm of the distal portion of the esophagus about 5 cm. above the diaphragm. After about one hour, some mucoid material and barium passed into the stomach, outlining the terminal portion of the esophagus. The mucosal markings were not distorted or infiltrated. It was concluded that marked spasms of the terminal portion of the esophagus, possibly on the basis of esophagitis, was present. Esophagoscopic examination was performed on June 1. The upper two-thirds of the esophagus was entirely normal. The hiatal lumen was completely obliterated, and it was impossible to pass a bougie beyond this area. No fungating tissue was available for biopsy. The abnormalities observed were suggestive of a new growth infiltrating the outer wall of the esophagus and compressing it It was thought that the original site of the lesion might be in the stomach The patient became gradually able to take increasing amounts of finely chopped foods and liquids in small amounts Atropine and other antispasmodics did not seem to influence the condition On June 16, twenty-four days after her second admission to the hospital, the patient was discharged somewhat improved

Third Admission—The patient was readmitted to the medical service of the Jewish Hospital on July 2 complaining of "stiff neck" and pain in the occipital region She stated that on the morning of June 30 she had been unable to get out of bed She could not raise her head because of stiffness of the neck and pain in the back of the head Her appetite had been poor since her discharge from the hospital, and there had been a weight loss of 7 pounds (3 2 Kg) in six weeks The patient made no mention of increased frequency of vomiting or of difficulty in swallowing On admission the temperature was 102 F and there was definite evidence of trapezius spasm The patient was unable to flex the neck and resisted passive flexion It was thought that she might be suffering from meningitis A spinal fluid tap revealed clear fluid under 200 mm of water pressure and 28 cells of the lymphocytic type On the next day the spinal fluid pressure was 80 mm of water One hour after the second spinal tap the patient could flex her neck readily The symptoms improved without specific treatment, and the presence of meningitis was not proved Roentgenograms of the esophagus at this time revealed a congenitally short esophagus The mucosal markings of the stomach were normal The duodenal cap was not deformed

Esophagoscopic examination was performed on July 13 and revealed the same constrictive changes previously noted at the lower end of the esophagus The lumen in this region was almost completely obliterated by what appeared to be fixation of the wall The esophagoscopist was unable to pass this point of constriction and from what was seen endoscopically could not confirm the diagnosis of congenitally short esophagus The patient was discharged on July 23

Fourth Admission—The patient was readmitted to the Jewish Hospital on August 4 This was one hundred and five days after the original cholecystectomy At the time of her fourth admission the patient was unable to retain either solid or liquid food The clinical and medical observations were those associated with dehydration and malnutrition She weighed only 60 pounds (28 Kg) The value for serum protein was 5 3 Gm per hundred cubic centimeters The erythrocyte count was 3,480,000 per cubic millimeter of blood Dehydration was corrected with intravenous fluids, and on August 6 a Witzel jejunostomy was performed with nitrous oxide-oxygen-ether anesthesia Digital examination of the esophageal hiatus, the abdominal portion of the esophagus and the stomach failed to reveal any fixation or any masses suggestive of extraluminal pathologic change in this region The patient's nutritional state improved rapidly with jejunostomy feedings and intravenous fluids On August 19 fluoroscopic study revealed improvement of the constriction at the lower end of the esophagus Barium passed readily into the cardiac end of the stomach On August 24 the stricture was dilated, but the esophagoscopist believed that this would be of only temporary value The patient's course then became stationary, and she failed to gain further weight on jejunostomy feedings Despite the somewhat improved roentgen appearance, the patient continued to have difficulty in taking all feedings She could not swallow solid food The esophagoscopist reported that he was unwilling to continue periodic dilatations because, in his opinion, that no permanent benefit would be obtained

On September 9 an esophagogastrostomy was performed with endotracheal anesthesia by a left transthoracic approach The patient was ambulant and taking a soft diet on the fifth postoperative day On September 20, eleven days after the esophagogastrostomy, an esophagogram revealed temporary dilatation of the proximal three-fourths of the esophagus Barium passed readily into the stomach Jejunostomy feedings were maintained even after performance of the gastroesophagostomy until removal of the feeding tube on October 23, because there were occasional bouts of regurgitation after oral feeding However, on October 5 roentgenograms revealed satisfactory function of the esophagogastrostomy with practically no retention The patient's weight gradually improved and returned to normal She was last observed on Jan 18, 1951, at which time she said that she was eating food of all types and that her weight was at a higher level than it had ever been (100 pounds, or 45 Kg.). She had no complaints referable to swallowing.

SUMMARY AND CONCLUSIONS

A case of severe esophagitis is presented, in which surgical intervention was required to reestablish normal swallowing. The esophagitis followed an episode of acute cholecystitis with obstruction of the common duct requiring use of the Levine tube for several days both preoperatively and postoperatively. Symptoms of esophagitis developed during convalescence from the gallbladder operation. Esophagoscopic study revealed such marked constrictive changes at the lower end of the esophagus that repeated attempts at dilatation were not advised. Complete relief of symptoms was obtained by esophagogastrostomy after preliminary jejunostomy to improve the patient's nutrition.

SOMMAIRE ET CONCLUSIONS

On rapporte un cas d'oésophagite si sévère qu'on dût pratiquer une intervention chirurgicale pour ramener le mouvement de déglutition. L'oésophagite fut consécutiveà une épisode de cholécystite aigue avec obstruction du cholédoque où en employa le tube Lévine avant et après l'opération. Les symptômes d'oésophagite apparement durant la convalescence à la suite de l'opération sur la vésicule. L'oésophagoscopie révéla la présence d'un rétrécissement de l'extrémité inférieure de l'oséphage tel qu'on ne risqua pas de répéter les tentatives de dilatation. On obtint une disparition des symptômes par oésophago-gastrostomie à la suite d'une jéjunostomie dont le but était d'améliorer l'état de nutrition du patient.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

Es wird ein Fall von schwerer Speiseroehrenentzuendung vorgestellt, in dem zur Wiederherstellung des normalen Schluckvorganges ein chirurgischer Eingriff noetig war. Die Speiseroehrenentzuendung trat im Gefolge einer akuten Gallenblasenentzuendung mit Choledochusverschluss auf, die vor und nach der Operation eine mehrtaegige Anwendung eines Magenschlauches (Levine) erforderlich machte. Zeichen einer Speiseroehrenentzuendung traten in der Rekonvaleszenzperiode nach der Gallenblasenoperation auf. Die oesophagoskopische Untersuchung zeigte so starke Einschnuerungsveraenderungen am unteren Ende der Speiseroehre, dass wiederholte Dehnungsversuche nicht ratsam erschienen. Eine voellige Behebung der Symptome wurde durch eine Oesophagogastrostomose erzielt, nachdem vorher eine Jejunostomose zur Hebung des Ernaehrungszustandes des Kranken angelegt worden war.

RESUMEN Y CONCLUSIONES

Se presenta un caso de esofagitis grave, que hubo de ser operado para restablecer la ingestión normal. Dicha esofagitis siguió a un episodio de colecistitis aguda con obstrucción del colédoco, que requirió el uso pre y postoperatorio de la sonda de Levin por varios días. Los sintomas de la esofagitis se desarrollaron durante la convalescencia de la colecistectomía. La esofagoscopia reveló un proceso de constricción tan marcado en el extremo inferior del esófago, que repetidos intentos para dilatación no dieron resultado. Se obtuvo el alivio completo de los síntomas con la esofagogastrostomía, después de yeyunostomía preliminar para mejorar la nutrición del paciente.

RIASSUNTO E CONCLUSIONI

Viene riferita un'osservazione clinica di esofagite grave, in cui si dovette ricorrere a un intervento chirurgico per ristabilire la normale deglutizione. L'esofagite era seguita ad una colecistite acuta con occlusione del coledoco che, a sua volta, aveva richiesto l'uso del tubo di Levin per parecchi giorni, pre- e post-operatoriamente. I segni dell'esofagite si erano manifestati poco dopo l'operazione sulle vie biliari, e l'esofagoscopia aveva rivelato

una stenosi della porzione terminale dell 'esofago di cosi alto grado do far ritenere inopportuni i ripetuti tentativi di dilatazione Si pote ottenere la totale scomparsa dei disturbi mediante un'esofagogastrostomia, dopo che una digiunostomia preliminare aveva consentito di migliorare le condizioni di nutrizione del paziente

SUMARIO E CONCLUSOES

E' apresentado um caso severo de esofagite no qual uma intervencão cirurgica foi requerida para restabelecer a deglutição normal A esofagite veiu em seguida a um episodio de colecistite aguda com obstrução do coledoco sendo necessario o uso do tubo de Levin por varios dias no pre e no posoperatorio Sintomas de esofagite desenvolveram se durante a convalescenca da operação de vesicula biliar Estudos esofagoscopicos revelaram tão constrictivas alteraçoes na extremidade inferior do esofago que repetidas tentativas de dilatação não seriam prudentes Completo alivio de sintomas foi obtido pela esofagogastrostomia depois de jejunostomia preliminar para melhorar a nutriçao do paciente

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An Evaluation of the Operative Treatment of Ruptured Lumbar Discs

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VINEYARD HAVEN, MASSACHUSETTS

THE correct evaluation and treatment of the ruptured disc is a relatively new and somewhat difficult problem. Many excellent articles and monographs have been written on the various phases of the disc syndrome since Mixter and Barr[1] made their important contribution in 1934. It is not our intention to review and summarize these excellent contributions. It is interesting, however, to note the early enthusiasm and optimism concerning the newly discovered condition and its operative treatment. Recently the literature has indicated a sounder evaluation of the problem, but there are still some controversial phases. We should like to present some of our observations concerning this problem. From the senior author's operative experience in about 250 cases during the past eight years, we decided to make a critical study of 50 consecutive cases operated during the years 1945 to 1948 inclusive. The observations and statistics given will be specifically those obtained from the study of these unselected consecutive cases, with some general observations gained by the senior author in his total experience with the disc problem.

We wish to state that in all 50 cases studied the lumbar area was suspected. Our discussion, therefore, concerns this area, in which more than 96 per cent of ruptured discs occur.[2] The 50 cases were really all cases of the syndrome of lumbar pain with sciatic radiation, and, although the majority were typical cases of ruptured disc, a few so-called "atypical" or "borderline-disc suspect" cases were included.

Any surgeon who has had considerable experience with the disc problem knows that a ruptured disc is a very genuine pathologic entity. It can be diagnosed with a high percentage of accuracy, and any changes observed at operation are definite. In spite of many contributions pointing out the typical and usual complaints and the physical manifestations of the ruptured disc, there is still some skepticism with regard to diagnosis and treatment. There is usually little difficulty in diagnosing the typical ruptured disc. Any physician who is acquainted with the typical complaints and accustomed to examining a patient's back and testing his reflexes and sensations in the lower extremities can diagnose ruptured disc with a high percentage of accuracy. In an atypical or borderline case, however, the aid of further diagnostic tests and a disc specialist may be necessary. Special attention should be given to atypical cases. Because the operative results in this group naturally have been less successful, there have been increasingly frequent warnings against surgical intervention. In a case in which they are not typical and do not fulfill exacting complaints and physical findings supported by myelography[3] they are often denied the surgical treatment that might cure or improve him. Yet the patient is often as uncomfortable, as

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much disabled and as severely handicapped economically because of time lost from work as is the typical patient, if not more so Too often he is made subject to bizarre diagnoses and treatment He requires more exacting and critical diagnosis, observation and appraisal If, after study, the surgeon is convinced that the patient is honest in his complaints and is chronically disabled, he should not hesitate to do an exploratory laminectomy just as one does exploratory laparotomies and thoracotomies We have had some of our most striking and beneficial results in this group of cases We are willing to accept a decrease in percentage cures to help these patients

Partial hemilaminectomy for removal of a disc, although technically exacting and requiring to be done by one trained in disc surgery, is not a really serious major procedure and does not weaken the patient's back if done properly It carries practically no mortality rate We have operated in 250 cases without mortality Serious complications are indeed few

The correct treatment of the "ruptured disc suspect" is a challenging problem Whether it be conservative or radical, we must admit that the results of treatment are not as good as we should like them to be One must realize that the patient with a ruptured disc does not have a normal, strong healthy back The weakness and derangement that were responsible for rupture of the disc may persist in spite of treatment, so that the surgeon soon finds himself working for relief and palliation of disabling and crippling symptoms We do not always achieve complete cure by removing an abnormal disc Whether this condition is treated conservatively or radically, it may be characterized by remissions and exacerbations Because the results of surgical intervention are not always completely satisfactory, these cases become more or less of a liability and responsibility to the operating surgeon But if the profession and the patients realize that we are working for palliation of symptoms, they will be less apt to condemn or misjudge the results of surgical intervention when an occasional failure occurs or only partial relief is obtained

There are a great many more cases of ruptured disc than was once believed There are many causes for low back pain, but in our opinion any patient with low back pain with sciatica should be suspected of having a ruptured disc until the contrary is proved There are all degrees of this pain, and the attacks vary from time to time in severity, usually becoming more severe with each succeeding attack In many cases the condition should be treated conservatively, but the typical or disabled patients should be operated on Exploration is needed in the case of every chronically disabled patient Also, if there is no response in an acutely disabled patient after a reasonable period of conservative care and the classic signs and symptoms are still present, we see no reason for delaying operation

Several recent studies have been published on large series of cases, which have clearly shown the advantage of surgical treatment over nonoperative treatment where objective signs of nerve root pressure are present Shinners and Hamby[4] noted that 59 6 per cent of surgically treated patients considered themselves well, as against only 29 5 per cent of those treated conservatively

We have always believed in operative treatment of the severe or disabling condition, not limiting it to the typical text book picture yet being careful in the selection of borderline cases We routinely discuss the problem frankly with the patient before operation and warn him that, although we believe he will obtain marked symptomatic relief and freedom from the severe crippling effects of a ruptured disc we cannot promise him a normal back, he must be willing to accept partial relief We are pessimistic about the symptomatic results in compensation cases or legally contested cases in which the patient will gain financially by continuing or prolonging his complaints

Material.—The material consists of 50 consecutive unselected cases of the syndrome of lumbar pain accompanied by sciatic radiation in which operation was performed during the years 1945 to 1948 inclusive, and the results studied intensively in 1949. The majority were considered rather typical cases, but a few fell into the "atypical" category. We use this term here to denote not mild conditions, but rather conditions with long histories of disability or doubtful diagnosis, and conditions associated with other pathologic change in the lumbar area. Nerve root pressure, however, was present. Laminectomy was done in the latter group on an exploratory basis, in an effort to make a diagnosis and relieve nerve root pressure whatever the cause. It should be stated that all of our 50 patients were of the hospital-practice type and were either sent to the hospital specifically for appraisal as surgical risks for disc operations or had been disabled long enough and severely enough to require hospitalization. It is our policy to treat both mild and acute conditions conservatively until we see how they respond, except for the massive rupture type with severe symptoms and compression of the cauda equina. This type should be operated on almost immediately.

Forty-eight of the patients were male and 2 were female. Their ages, grouped in decades, are given in Table 1.

TABLE 1.—*Age Incidence*

Under 20 years	1	2%
20 to 30 years	24	48%
30 to 40 years	15	30%
40 to 50 years	8	18%
Over 50 years	2	4%

The duration of symptoms prior to admission varied from ten days to twenty-five years.

It happens that two of the three largest ruptured discs we have ever removed occurred in this series. Both were of the acute, severely disabling type, producing complete block and compression of the cauda equina. Both were surgically treated at an early stage, with very good results. Also, several of our real "problem cases" occurred in this series.

Etiologic Background.—Little is known about the cause of a ruptured disc beyond the fact that it primarily occurs where there is the greatest pressure and strain on the back and that it may be due to degeneration of the nucleus pulposus or to a defect in the annulus fibrosus or the posterior spinal ligament, with protrusion or herniation of a portion of the disc against the nerve. Injury *is an important contributing cause*, but its specific significance is as yet not clearly understood. In this series there was a history of injury to the back in 27 cases, or 54 per cent, the injury varying in degree from strain caused by lifting to falling from a height of 18 feet and landing on the buttocks. The actual injury as a rule was mild. In 23 cases, or 46 per cent, no specific history of injury could be recalled.

At operation we were impressed by the congenital anatomic variations and by the *instability and increased mobility often* observed at either the fourth or the fifth lumbar vertebra. For a better understanding and evaluation of the various important etiologic factors that predispose to disc herniation, one should refer to such articles as those written by Magnuson[5] and by Ver Brugghen.[6]

Diagnosis.—The most common and important symptoms and signs recorded are listed in Table 2. Although others are important, these were present in a high percentage of cases. They varied significantly *with the severity, site and duration of the* nerve root pressure and also, as recorded in the table, with the ability, knowledge, experience and thoroughness of the examiner.

Although we have now adopted pantopaque myelography as a routine diagnostic procedure to determine the presence, the level and the number of lesions and to rule out other pathologic conditions, we were using myelography selectively at the time of these cases.

TABLE 2.—*Symptoms Observed in 50 Cases*

1	Pain or discomfort in lower part of back with sciatic radiation of pain	100%
2	Increased pain and discomfort after coughing, sneezing or straining at stool*	70%
3	Discomfort after sitting or lying in the same position for very long**	68%
4	Intermittent nature of symptoms	90%
5	Discomfort in buttocks or hip on involved side	50%
6	Numbness, tingling, cramping or insecurity of the involved leg	50%

*This varied directly in degree with the acuteness and severity of the attack, decreasing or disappearing during remissions.

**Patients stated they had to change positions frequently. Pain nearly always increased if sat on involved buttocks. Lying on stomach in bed often relieved pain.

TABLE 3.—*Signs Observed in 50 Cases*

1	Deep soreness and tenderness in lower part of back, often well localized at site of disc lesion	72%
2	Positive Lasegue's sign or straight leg raising	84%
3	Loss of lumbar curve	60%
4	Some loss of flection	54%
5	Reflex changes	62%
6	Sensory changes	52%
7	Measurable atrophy of leg	50%

TABLE 4.—*Results of Myelographic Study (34 of 50 Cases)*

Correct site	22	64.7%
Different level	7	20.6%
False positive	4	11.7%
False negative	1	3%

Of the 50 cases, preoperative myelographic examination was performed in 34, or 68 per cent. In 22 cases, or 64.7 per cent, the interpretation agreed with the operative observations. In 7, or 20.6 per cent, in which a lesion of the fourth lumbar disc was suspected, operation disclosed the lesions to be located at the fifth lumbar level. There were 4 (11.7 per cent), false positive and 1 (3 per cent), false negative results.

In 21 of the 33 cases studied myelographically a definite lesion of the disc was seen at operation. Then, as now, we felt that clinical evaluation was the best indication for surgical intervention but appreciate the help myelography gives us. Myelography has become more accurate with increased experience and improved technic, just as our clinical diagnosis and treatment have improved. We are now achieving a higher percentage of accurate localization with apparently fewer false positive but, we believe, more false negative results. If clinical judgment indicates operation, we do not let a negative myelographic appearance alter our decision.

Definitely ruptured discs were observed in 35 of the 50 cases, or 70 per cent. Of these 35 ruptures 24, or 68.7 per cent, occurred at the lumbosacral joint, and 8, or 23 per cent, were at the fourth lumbar level. In 2 cases ruptured discs were found at both the fourth and the fifth lumbar interspaces, and in 1 case at both the third and the fourth. Fusion was performed in 3 of the 50 cases. In 2 of these cases there was massive herniation of the disc, producing complete block and compression of the cauda equina. In several cases there was some arthritic lipping and spurring or a narrowed foramen.

It has been our policy to do a partial hemilaminectomy, almost always exploring the fourth and fifth lumbar interspaces, removing the herniated disc and thoroughly curetting the disc space. In cases of recurrence, or when there is root pressure due to spurring or narrowing of the foramen, we are more radical, removing a greater portion of the lamina above and below and also unroofing the foramen so that the nerve lies free. We usually do a fusion operation when spondylolisthesis, recurrence, arthritis or increased mobility and instability of the vertebrae is a factor. Our preference is to use an iliac crest graft at the time of

TABLE 5.—*Sites of Ruptured Discs (Observed in 35 of the 50 Cases)*

Lumbar sacral	24	68.7%
L4 level	8	23 %
Both L4 and L5	2	5.7%
Both L3 and L4	1	2.8%

TABLE 6.—*Results of Operative Treatment*

Comlete relief	8	16%
Marked benefits	21	42%
Moderate benefits	11	22%
Fair relief		
Little or no relief		

TABLE 7.—*Work Status*

Arduous	50%
Limited	40%
Light	4%
Not working	6%

TABLE 8.—*Follow-up Results*

Operation helped	94%
No further treatment	80%
Medical treatment	20%
Symptom-free	14%
Residual symptoms	86%
Reoperated on	10%

operation, placing it in the opposite gutter after thoroughly roughening the lamina. In some cases of marked spondylolisthesis, when we also find a ruptured disc, we prefer a tibial cortical graft.

Results of Operative Treatment.—The immediate postoperative results were as follows: In 41, or 82 per cent, of the 50 cases there was improvement or relief of symptoms at the time of discharge. No note is available concerning immediate results in the remaining 9 cases.

The late follow-up results, analyzed in 1949, one to three years after operation and based entirely on the patient's own appraisal of his benefits from operation as declared by him in a detailed questionnaire, personal interviews and examinations were as follows: In response to the question, "Do you think the operation helped you?" only 3 patients said "No"—94 per cent answered "Yes." At the time of survey only 3 patients, or 6 per cent, stated that they could not do light work. One was a "compensation case" who also had pulmonary tuberculosis and was in a sanitorium; 1 had been reoperated on by us, with performance of a fusion, and was improved, but was convalescing from the operation; the other patient had a strong psychoneurosis and stated that the factories would not hire him. For all the others the average postoperative interval before returning to light work was three and four-tenths months. We usually advise three months' convalescence. With regard to the ability to do a full day's arduous work, 50 per cent stated that they were able to do this after an average of five and eight-tenths months. Of the remaining 50 per cent, 6 per cent, who are not working at all, are the patients in the special cases aforementioned. Two cases patients, or 4 per cent, are still on light duty: one is a "compensation case" and the other is awaiting settlement of a lawsuit. Twenty patients, or 40 per cent, are working on limited duties. Nearly all of these patients belong to the working class and have to do heavy manual work. As to further treatment since operation, 80 per cent said that they had not required any, while 20 per cent had either received some physiotherapy or obtained a back belt. One had been reoperated on, with fusion, and was improved.

We asked each patient to report any postoperative symptoms referable to the back or to the legs, however mild. Only 14 per cent were completely free of symptoms. Eighty-six per cent stated they had noticed soreness, stiffness or weakness in the back and/or cramps, discomfort or numbness in the legs, usually mild and first noticed after working. The symptoms were intermittent and mild as compared to the severe disabling type that existed before operation. Practically all were happy because of the relief obtained.

Additional information regarding our 5 cases with poor results is now available, a year after our survey. In 4 of these there had been proved ruptured discs and in the other arthritic changes. Three have been reexplored, a recurrence being noted in 1 and only scar tissue about the nerves in 2. Fusion has been performed in all cases, and all of the patients are now improved.

We also have recently reoperated on 2 of the other patients in whose cases the results were rather unsatisfactory. Both were found to have recurrent lesions of the discs. Fusion was performed at the time of operation, and the patients' condition is much improved. Hence, of the original 50 patients, we have now reoperated on 5, or 10 per cent, all of whose cases were in our "failure" or "poor result" classifications.

SUMMARY

The authors present some general observations and opinions on the problem of the ruptured disc, after an operative experience of about 250 cases in the past eight years. They also give the results of a careful critical analysis of results in 50 unselected consecutive cases. They emphasize that, although the diagnosis of a typical ruptured lumbar disc should not be difficult, the treatment, whether conservative or operative, at present accomplishes relief of severe and disabling symptoms and aids in rehabilitating the patient rather than achieving complete relief and restoration to normal. Ninety-four per cent of the patients were glad they had operative treatment; 86 per cent stated they still had some residual mild complaints and 10 per cent have since undergone reoperation and are now improved. If the patient and the physician understand this concept it will aid in evaluation of the results of operative treatment. Further observation, evaluation and improved operative treatment are necessary to deal with the problem of the ruptured disc.

RESUME

L'auteur émet des opinions et des considérations générales sur la rupture du disque intervertébral se basant sur une expérience de huit années avec 250 cas. Le diagnostic est facile à faire et le traitement, soit chirurgical, soit conservateur, donne du soulagement au patient et lui permet une réhabilitation à la normale. D'après l''auteur, 94% des patients sont heureux de subir le traitement chirurgical; 86% de ce nombre présentent encore des symptômes. 10% doivent subir une nouvelle opération. Si le médecin et le patient étaient mis au courant de cet état de chose, les résultats opératoires seraient mieux évalués vis-à-vis de la guèrison.

ZUSAMMENFASSUNG

Einige das Problem des Zwischenwirbelscheibenrisses betreffende Beobachtungen und Auffassungen werden an Hand von 250 in den letzten acht Jahren operierten Faellen dargestellt. Die Ergebnisse werden einer sorgfaeltigen kritischen Analyse von 50 Faellen unterzogen. Die Verfasser betonen die Tatsache, dass, obgleich die Diagnose einer typischen Zerreissung einer Zwischenwirbelscheibe der Lendensaeule nicht schwierig sein sollte, die Behandlung, sei sie chirurgisch oder konservativ, zur Zeit eher eine Linderung schwerer behindernder Symptome und eine Hilfe zur Wiederherstellung als eine voellige Heilung und Schaffung normaler Verhaeltnisse bringt. Die Beobachtungen der Verfasser zeigen, dass 94% ihrer Kranken mit der erhaltenen operativen Behandlung zufrieden waren, dass aber 86% noch unter leichten Beschwerden litten. 10% wurden einer zweiten Operation unterzogen und sind jetzt gebessert. Wenn Arzt und Patient die dargelegte Auffassung richtig begreifen, so werden die durch die chirurgische Behandlung erzielten Resultate besser verstanden und ausgewertet werden. Weitere Beobachtungen und Auswertungen und eine bessere Operationstechnik sind unerlaesslich.

RESUMEN

Se presentan algunas observaciones y opiniones generales sobre el problema de la ruptura del disco, basándose en una experiencia operatoria de 250 casos aproximadamente en los últimos ocho años. Se hace un cuidadoso análisis crítico del resultado en 50 casos. Se señala el hecho de que, aunque el diagnóstico de una ruptura típica de un disco lumbar no sería difícil, el tratamiento operatorio o conservador produce actualmente el alivio de severos síntomas de invalidación y ayuda a la rehabilitación del paciente más que al alivio completa y restauración a lo normal. Según los autores, el 94% de los pacientes se encontraron complacidos del tratamiento operatorio, pero el 26% presentaron aun trastornos residuales. El 10% han sido operados por segunda vez y han mejorado entonces. Si el paciente y el cirujano se compenetran de este concepto, esto ayudará al mejor entendimiento y valuación de los resultados obtenidos

por el tratamiento operatorio. Se necesitan mayor observación, valuación y mejoramiento del tratamiento operatorio.

RIASSUNTO

In base all'esperienza di circa 250 casi di rottura del disco intervertrebale operati nel corso degli ultimi 8 anni, sono presentate considerazioni generali ed opinioni. Un'analisi critica accurata é condotta sui risultati di 50 casi. Gli Autori mettono in rilievo il fatto che allo stato presente, per quanto la diagnosi di tipica rottura del disco lombare non dovrebbe essere difficoltosa, il trattamento sia esso operatorio o conservativo, rimuove i sintomi acuti e inabilitanti e aiuta a riabilitare il paziente piuttosto che a riportarlo al normale. Nella esperienza degli Autori, 94 per cento dei pazienti erano contenti di essere stati operati, ma l'86 per cento ancora avevano una lieve residua sintomatologia. Dieci per cento sono andati incontro ad una seconda operazione ed ora sono migliorati.

Se entrambi, paziente e medico, si rendono consci di questo concetto, sarà di aiuto nella migeiore comprensione e valutazione dei risultati ottenuti con trattamento operativo. Ulteriore valutazione, osservazione e migliorata tecnica sono necessari.

SUMÁRIO

Algumas observações gerais e opiniões sobre a problema da rotúra do disco são apresentados sobre a base de uma experiencia de cêrca de 250 casos durante os passados oito anos. A analise critica cuidadosa do resultado em 50 casos foi feita. Os autores realçam o fato de que, embára o diagnostico de uma rotúra tipica de disco lombar não seja dificil, o tratamento, seja operatório ou conservativo, produz atualmente alivio de severos e invalidantes sintomas e auxilia a reabilitação do paciente em maior grau do que ajúda no compléto alivio e restauração ao normal. Segundo, a experiencia do autor, 94 por cento dos pacientes senturam-se satisfeitos de ter recebido tratamento operatorio, mas 86 por cento mantiveram-se com leves queixas residuais. Dez por cento foram, depois disso, submetidos a uma segunda operação e melhoraram. Si ambos, paciente este conceito, ele ajudará em melhor entendimento o avaliação de resultados obtidos por tratamento operatório. Ulterior observação, avaliação e tratamento operatório aperfeiçoado são necessarios.

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Papilloma of the Bladder

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PAPILLOMA of the bladder constitutes 90 per cent of all tumors of the bladder. The smooth epithelial tissue of this organ, like epithelial tissue elsewhere in the body, is subject to a greater incidence of anaplasia than is the connective and muscular tissue.

This paper is a brief account of the present status of papilloma of the bladder. One must have a clear understanding of the pathogenesis of this tumor in order to evaluate the treatment employed in any given case. A microscopic cross section of the urinary bladder reveals a mucosal, a submucosal and a muscular layer. There are no glands and no lymphatic vessels in the mucosa of the bladder.

Ewert and Summons, in a recent article, *pointed out the following facts:* 1. The malignancy of papillomas of the bladder is now recognized and accepted; it has been proved that so-called benign papillomas metastasize. 2. Recurrent vesical papillomas are of a higher grade of malignancy than is the primary growth. 3. Papillomas recur so rapidly and in such numbers in the bladder that cystectomy is sometimes required. 4. In some cases a recurrent papilloma, formerly malignant, appears to be benign. 5. Papillomas may also extend into the ureter, so that it becomes advisable to remove the kidney, the ureter and a portion of the bladder. They indicate their malignant tendency by this extension, despite the fact that microscopic examination reveals no malignant cells. 6. Papillomas of the bladder of Grade 1 malignancy may invade the posterior portion of the urethra and the prostate, and these metastatic lesions may be of a higher grade of malignancy and of an entirely different cellular structure.

Cystoscopic evaluation of the tumor is sometimes more accurate than microscopic study In performing a biopsy one should attempt to get a portion of the vesical musculature, in order to determine whether invasion of the subsurface has taken place.

My own experience in the treatment of more than 200 vesical tumors in the past twenty years leads me to certain definite therapeutic conclusions. All tumors of the bladder should be treated by radical surgical intervention, either transurethrally or suprapubically. As everyone knows, the word "radical" is derived from the Latin word *radix*, or root. One should not be content with removing the tumor; one must also remove the roots if recurrence of the growth is to be prevented. The cystoscopist who merely lops off the branches of the vesical papilloma *and ignores the roots* does his patient a disservice. The inevitable recurrence will convince him of this fact. Often the tumor will advance with increasing rapidity, and even the scalpel may then be insufficient to impede its progress. Total cystectomy with the creation of a cloaca is a more heroic measure than segmental resection.

Most surgeons today will admit that there is altogether too much radical surgical treatment. One should consider the retention and maintenance of function as well as the elimination of the growth. Unnecessary sacrifice of the bladder is a serious indictment against the efficacy of treatment when it is possible to remove the growth and spare the bladder. Utilizing radium, I believe such treatment to be more satisfactory than total cystectomy and bilateral implantation of ureters into the colon.

Early diagnosis and early treatment always give the best results. Carcinoma of the bladder is not heralded by pain; in this it resembles carcinoma of the stomach, which is *not provocative of pain* unless the growth is very [illegible] the gastric

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outlet. Pain is usually a late symptom, and if one wishes to reduce one's mortality rate in cases of carcinoma one has to make the diagnosis early. The most common symptoms of papilloma of the bladder are hematuria, frequency of urination and clysuria. The later symptoms frequently develop from the associated cystitis. Bleeding is always a warning sign.

The exact cause of papilloma of the bladder is not known. However, it is believed that chronic irritation is a forerunner of the tumor. Papilloma of the bladder first projects into the concavity of the organ, and it is only later that it invades the submucosa or the muscular layer. This invasion, as has been pointed out by Jewett, is an important factor in determining the type of therapy to be employed. Rectal palpation of the growth is an adjunctive means of determining the degree of extension.

It is not within the scope of this paper to correlate the relation of calculi, of the irritation of coal tar products or of bilharziasis to the formation of a vesical papilloma. Suffice it to say that any irritation continued over a long enough period may be the cause of papilloma of the bladder. In fact, Abehause has shown that urine itself affects the growth of these tumors.

The patient with a papilloma of the bladder should be given a thorough physical examination and scrutinized for evidence of metastases. In association with Rolnick, I was one of the first in the world to describe cutaneous metastases from a carcinoma of the urinary bladder. There are now 12 cases on record. Carcinoma of the bladder is known to metastasize to the bones, the lymph glands and remote parts of the body, although the usual process of dissemination is not by metastasis, either lymphogenous or hematogenous. It usually takes place by local extension into the pelvis.

The exact diagnosis of papilloma of the bladder is made by cystoscopic examination. Larger growths may also be photographed on a roentgen film by cystographic means.

The majority of papillomas of the urinary bladder occur about the ureteral orifices. The lateral walls, the neck, the posterior wall and the floor of the bladder contain papillomas less frequently, but the tumors are readily seen when present. Tumor of the dome of the bladder is less common, but a thorough search must be made of this location. The cystoscopist is remiss if he does not thoroughly search the dome. In our experience, 5 of 200 papillomas of the bladder occurred in the dome. Those close to the vesical neck are less difficult to find, and with adequate visualization through retrograde and right angle telescopes the tumors cannot be easily overlooked.

The treatment available today is fulguration (this is the method introduced by Edwin Beer in 1912), with use of the high frequency current through the operating cystoscope. This method suffices for the smaller tumors and may be considered an ideal treatment for small papillomas. Fulguration should be thorough in order to thwart the recurrence of the growth and to annihilate the roots.

Biopsy and cystoscopic study of the tumor should never be neglected. Radium, in the form of emanation or needles, and lately in the form of a capsule anchored in a Foley catheter (after the method of Lewis) is an effective agent for attacking the roots of the papilloma. Surgical diathermy through a suprapubic cystotomy is also used. Total cystectomy, with implantation of the ureters into the rectum and rectosigmoid, is gaining increasing favor, and I have performed it with success. In the presence of far advanced tumors, transplantation of the ureters with the carcinoma left *in situ* has afforded some palliation. I have 1 patient whom I treated by this method three years ago, who is still doing well, although the tumor is palpable and about the size of a grapefruit.

In the male the prostate and the seminal vesicles are removed along with the urinary bladder. According to Hugh J.

Jewett, any tumor, regardless of its histologic pattern and degree of malignancy, which has infiltrated less than halfway through the muscularis usually is confined to the bladder wall. Tumors that have infiltrated more deeply usually have spread beyond it. Therefore, each individual cancer patient must be treated on an individual basis.

The location of the growth is as important as the degree of malignancy in the grading of the tumor. Excision or any other means of eradication of vesical tumors is often followed at varying intervals by the development of one or more additional tumors. Seeds are frequently left behind, which grow and constitute the recurrence. The first stage of recurrence is hyperplasia of tissue; then early anaplasia, and then progressive malignancy. In ureteral implantation a submucosal tunnel should be created and a mucosa-to-mucosa approximation accomplished in order to obtain the best results and to prevent obstruction, reflux, infection and leakage.

REPORT OF A CASE

A white man 67 years of age came to me in July 1951 because of a history of hematuria. He stated that 7 years prior to this occasion he had undergone an operation for removal of a tumor of the bladder, at "one of the best tumor clinics in the Middle West." During the interim since the removal of the original tumor he had enjoyed good health and lost little weight. His family thought him anemic, and he received injections of iron and liver extract in the doctor's office. About a year before coming to me he passed a little blood, but this quickly cleared up and he did nothing more about it. For the past two weeks he had been troubled with frequent urination and had passed considerable amounts of dark blood in the urine. He had had nocturnal. He got up frequently for years. He had no abdominal scar, and he stated that the previous operation was done transurethrally and that considerable tumor tissue was removed. He said that the doctor told him it was a simple growth and assured him that he would be all right. I later checked with the cystoscopist who removed the original growth. He stated that he removed transurethrally about 65 Gm. of tissue, a mass about the size of a golf ball, which was located above the left ureteral orifice. Microscopic section revealed it to be a Grade I transitional cell carcinoma of the bladder. He further stated that the patient told him that he had had some bladder discomfort for two years prior to consulting him for the disease.

Fig 1—Foley catheter, with anchored radon capsule.

General physical examination revealed the patient to be well nourished but anemic in appearance. The teeth were chronically infected. The blood pressure in millimeters of mercury was 140 systolic and 80 diastolic. Tenderness in the region of the gallbladder was elicited on percussion. The heart and lungs were normal. There was slight tenderness in the suprapubic area. There were no palpable lymph nodes. The prostate gland was enlarged (2 plus). There was a hypochromatic type of anemia.

Cystoscopic investigation was performed with the region under low spinal anesthesia. Multiple papillomas, involving the entire bladder, were seen. A biopsy specimen was obtained, and was reported as papillary carcinoma, Grade I, of the urinary bladder. After the cystoscopic procedure the patient continued to bleed, and the question of doing a total cystectomy was discussed with him. Open cystotomy with application of radium was also described to him. He preferred the radium treatment. In view of the history and observations we thought the latter treatment advisable. On June 12, eight days after admission to the hospital, the open

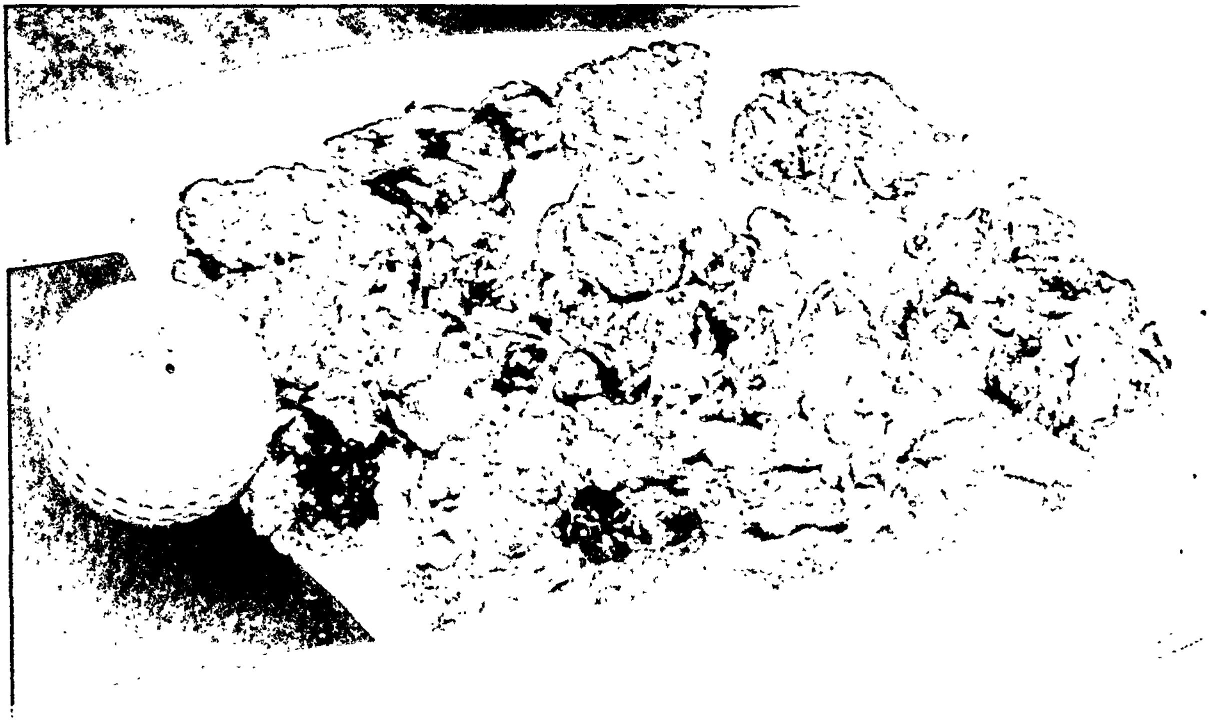

Fig. 2.—Papilloma of the bladder, which recurred after transurethral resection.

cystotomy was performed with the patient under general anesthesia. The bladder contained numerous papillary tumors. The wall was thickened. So numerous were the tumors that they completely filled the bladder. One by one they were removed by excision with a Bowie unit. Their weight was 320 Gm. Extensive coagulation was necessary, involving the lateral walls and the floor of the bladder, the region about the ureteral orifice, and the neck and dome of the bladder. Radium anchored in a Foley catheter was applied. The dosage of radium was as follows: On June 12, 38.3 millicuries of radon was applied for three days, a total dose of 2,130 millicurie hours. The second dose of radium was given on July 3, at which time 29.2 millicuries of radon was used for two days and three hours, a total of 1,650 millicurie hours. This dose is 10 per cent higher than that required to complete the full "cancer lethal" dose. However, this increase is usually made in order to allow for the increase in radioresistance of tissue when fractional doses are given. Fractional doses are given and are indicated especially in cases in which there is extensive denudation of the bladder. At the time of the second application of radium a transurethral resection of the prostate gland was done, with removal of 20 Gm. of hyperplastic prostatic tissue which obstructed the bladder neck. The patient was discharged from the hospital five days later at which time the urine was free of blood.

Follow-up: On September 1 the patient voided easily 6 to 8 ounces of grossly clear urine. His control was excellent. He had gained 15 pounds (6.8 Kg.). Microscopically he had Grade I pyuria (E. coli). Cystoscopically the bladder mucosa was approaching normal. The upper portion of the urinary tract showed some clubbing of the renal calyces. There were no stones and no tumors.

SUMMARY

Bleeding is a warning sign. Once a papilloma-bearing bladder, always a vulnerable bladder. Biannual or annual cystoscopic study is advisable. Recurrent bladder tumors are often produced by roots or seeds of the original growth which have been left behind.

Early diagnosis and early radical treatment give satisfactory results. Radical treatment implies removal of the roots.

The objective of successful thèrapy is to prevent recurrence. Because of the absence of lymphatics in the bladder mucosa, the spread is by direct extension in to the muscularis. Radium attacks the roots. With its use, vesical function may be preserved. Total cystectomy shoves one back in the evolutionary scale by creation of a cloaca, with its attending ills.

RESUMÉ

L'hématurie est la sonnette d'alarme chez les patients présentant un papillome vésical. Une vessie présentant un papillome est une vessie vulnérable. On recommande la cystoscopie—une ou deux par année. Des tumeurs récidivantes sont très souvent les racines des tumeurs oubliées. Il importe de faire un diagnostic précoce et surtout d'appliquer un traitement précoce pour avoir d'excellents résultats. Le traitement radical signifie l'extirpation des racines mêmes. Le but primordial du traitement est de prévenir les récidives. Puisque la muqueuse vésicale n'a pas de lymphatiques, la propagation à la musculeuse se fait par extension directe. Le radium détruit les racines. Par son emploi on conserve la fonction vésicale. La cystectomie totale présente un recul dans l'évolution puisqu'elle crée un cloaque—source de maux.

ZUSAMMENFASSUNG

In Faellen von Blasenpapillom bedeutet Blutung ein Warnungszeichen. Eine Blase, die einal ein Papillom gehabt hat, ist immer eine empfindliche Blase. Es ist ratsam, eine Zystoskopie in Abstaenden von ein oder zwei Jahren auszufuehren. Rueckfaellige Blasengeschwuelste beruhen haeufig auf den bei der Operation zurueckgelassen Wurzeln oder Keimen der ursprueglichen Geschwulst.

Fruehzeitige Diagnose und fruehzeitige radikale Behandlung ergeben befriedigende Resultate. Unter radikaler Behandlung versteht man Entfernung einschliesslich der Wurzeln. Das eigentliche Ziel erfolgreicher Behandlung liegt in der Verhuetung von Rueckfaellen. Da die Blasenschleimhaut keine Lymphbahnen hat, verbreitet sich die Geschwulst auf dem Wege unmittelbarer Ausdehnung in die Muskularis hinein. Radium greift die Wurzeln an. Seine Anwendung ermoeglicht die Erhaltung der Blasenfunktionen. Die totale Resektion der Blase fuehrt zur Schaffung einer Cloaca und wirft uns in ein fruehes Entwicklungsstadium mit all seinen laestigen Begleiterscheinungen zurueck.

RESUMEN

La hemorragia es un signo de advertencia en el papiloma de la vejiga. Desde luego una vejiga con papiloma es siempre una vejiga vulnerable. Es aconsejable un estudio cistoscópico bianual a anual. Los tumores vesicales recurrentes son frecuentemente las raíces o semillas que han sido dejados del neoplasma original.

El diagnóstico y el tratamiento radical tempranos dan resultados satisfactorios. El tratamiento radical implica la extirpación de las raíces. El objetivo verdadero de la terapéutica satisfactoria es prevenir la recurrencia. Debido a la ausencia de linfáticos en la mucosa vesical, la difusión es por extensión directa en la musculosa. El radium ataca las raíces, pudiendo preservarse con su uso la función vesical. La cistectomía total hace retroceder en la escala de la evolución creando una cloaca, con sus males consiguientes.

RIASSUNTO

L'ematuria è spesso indice di un papilloma della vescica. Una vescica che sia stata affetta da papilloma è sempre una vescica soggetta a riammalarsene; il che consiglia l'opportunità di controlli cistoscopici annuali o biennali.

I tumori recidivi della vescica si sviluppano spesso sulle radici o sui semi lasciati in situ durante l'asportazione del tumore primitivo.

Diagnosi e cura, purchè precoci, danno risultati soddisfacenti. La cura, per essere radicale, deve distruggere le radici il che

previene la recidiva, obbiettivo principale di ogni terapia che miri al successo. Data l'assenza di linfatici nella mucosa della vescica, la propagazione avviene per invasione diretta della mucolare.

Il radium attacca le radici, e col suo uso, viene preservata la funzione della vescica. La cistectomia totale, creando una cloaca, respinge il paziente addietro nella scala dell'evoluzione biologica, esponendolo inoltre alle note complicazioni.

SUMÁRIO

Em relação ao papiloma da bexiga, o sangramento é um sinal de aviso. Uma vez que uma bexiga contem um papiloma deve ser considerada como vulneravel. Exame cistoscopico é aconselhavel uma ou duas vezes por ano. Tumôres vesicais recurrentes são muitas vezes as raizes ou sementes do tumor original que foi deixado atraz.

Diagnostico e tratamento radical prococes dão satisfatórios resultados. O tratamento radical implica a remoção das raizes. O real objectivo de eficiente terapeutica é prevenir recurrencia. Devido á ausencia de linfaticos da mucósa da bexiga, o alastramento é por diréta extensão a muscularis. O radium atáca as raizes. Com seu uso a função da bexiga pode ser preservada. A cistectomia total empurra-nos para trás na escala evolutiva pela creação de uma cloaca com os perigos que as acompanham.

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Current Conceptions of Nonsuppurative Labyrinthitis

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WASHINGTON D C

TO SURGEONS who began study under Neuman Ruttin, Barany, Urbantschitz and Alexander, when suppurative labyrinthitis was about all there was to worry about and a symptom of fistula was one indication for surgical destruction of the labyrinth, the change in thought and procedure decidedly gives pause Otologists during the first World War tended to overestimate minor normal variations in labyrinthine reactions and established criteria that resulted in the rejection on physical grounds of many normal applicants for admission to the Aviation Corps Otology has passed through the period of antrotomies for gastrointestinal infections in children and the rediscovery of petrositis, which was overemphasized and probably overtreated, surgically speaking, though the condition and its surgical treatment were described by Siebenmann of Hamburg in the 1890's

Sulfa drugs and antibiotics have now relegated suppurative involvements to a minor role, and the stress today is on nonsuppurative conditions There is much confusion of thought in this field, and a summing up of ideas on this subject would be of help to those who are deprived of access to large teaching centers A number of years ago, while I was serving as Navy Specialist in Otolaryngology, many problems arose A questionnaire was prepared and sent to more than 175 representative otologists, and it proved of great benefit in estimating the value of the various treatments and procedures then in use This paper is based on the replies

Labyrinthine Testing —Probably no greater change in any branch of labyrinth examination has taken place than the change in testing The Hallpike-Cawthorne method has been generally accepted It is performed with the patient prone and head elevated 30 degrees The heat used is 44 C, the cold 30 C The irrigating can is elevated 2 to 3 feet (60 96 to 91 44 cm) The douching period is 40 seconds The patient's vision is fixed on a spot on the ceiling Time is measured from the beginning of the test to the end of the nystagmus Practically the only use of the turning test now is the cupula examination With tympanic perforations ethyl chloride vapor is advocated Galvanic reactions apparently are never used

Otosclerosis —The one nonsuppurative condition concerning which there is general accord is otosclerosis, and the two outstanding workers in the United States are Lempert and Shambaugh In Europe, Holmgren has limited all his work to otosclerosis, his untiring investigations kept this subject alive from the early work of Barany until the time of Sourdille Hutchinson presented the first successful case before the Royal Society of Medicine Jenkins and Fraser before him had attempted similar operations, but without success Hull of Edinborough and Popper of South Africa have done much in this field Early attempts and technics led up to the multistage operation of Sourdille, simplified and perfected by Lempert All are familiar with the work of these men, but it may be of interest to note that in Europe a great many otologists still use the retroauricular incision and often the two stage technic of Sourdille The points he stresses are the permanence of the fistula and the construction of a new typmanic system He uses the retroauricular approach, opening the mastoid with a gouge, and opens the lateral semicircular canal and [illegible] by [illegible]bing it

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Submitted for publication

down carefully with a flat scraper on the upper surface. The endosteum is removed by the Shambaugh technic, with preservation of the incus. In selected cases, recovery of hearing maintained for two years is achieved in 60 to 75 per cent of cases. Teamwork is essential, and it is questionable whether such a high incidence of recovered hearing can be reasonably expected without it. One hears less of patch sclerosis and more of histologically different areas which are most likely to be influenced by structural changes, such as the fistula ante fenestram which, according to Guggenheim, is a vestigial structure. Bast pointed out the styloid area as having a tendency to osseous changes. Lempert has reported otosclerotic changes in the ossicles; he has also recognized a fulminating type of change. Age levels above 45 or 50 reduce the operative indications, and marked cochlear disturbances are contraindicative, as is suppuration.

Kopetzky's ideas are somewhat at variance. In his earlier pathologic studies he has reported many cases of asymptomatic otosclerosis. In his opinion, cochlear and vestibular dysfunction is amenable to therapy. He emphasizes the glandular factors, including the pituitary; also, he stresses histamine sensitivity, vitamin deficiencies, hematologic changes and the heritage of deafness. In this connection, although little has been written about it, the Rh factor has been called into question with regard to some otherwise unexplainable disorders of the internal ear. Though not actually intralabyrinthine, the work of Cawthorne in England, Tickle in this country, and Sullivan and others in Canada in repairing facial nerve damage in the canal is worthy of note. Basically the work owes a great deal to Balance and Duel.

Tumors of the Acoustic Nerve.—These lesions, though eventually they require neurosurgical treatment, present so many otologic symptoms at first, coupled with their slow development and chronicity, that they are usually first observed by the otologist. Unilateral deafness, tinnitus and vague vestibular symptoms are common in many ear conditions, but involvement of other cranial nerves, corneal anesthesia, dizziness and nystagmus of the cerebellar type should put one on guard. A stereoscopic roentgenogram of the skull, particularly if planigraphic, may show enlargement of the internal auditory meatus and thus aid in arriving at a diagnosis. Other growths by extension naturally will involve the petrous portion of the temporal bone and cause symptoms. Cushing's sardonic comment, "Neurosurgeons miss the locations and otologists miss the tumors," should not be applicable today.

Neurolabyrinthitis.—Symptoms of so many of these allied conditions approach in intensity those of classic Meniére's disease, with its deafness, tinnitus and vertigo, that differentiation is not easy. It is hard to distinguish an end-organ disease from a central disturbance. If toxic types are included in this category, all the toxic types must be considered. It is probably an axiom that the cochlear division of the eighth nerve is less resistant than the vestibular, so that cochlear symptoms, e.g., tinnitus and impaired function, will first attract notice.

Certain well-known drugs and chemicals, such as the cinchona group, the calicylic acid derivatives, the arsenicals and the antibiotic streptomycin, are generally known. The newer chemicals used in industry, and even saccharine, may be a cause. Alcohol and tobacco cannot be overlooked; highly seasoned food is reported as a factor by otologists in New Orleans. Dental disorders are reported to be a common cause, and unrecognized sinus disease accounts for many cases. Pathologically, serous labyrinthitis probably comes between toxic conditions and post-infections. It represents a coagulation of labyrinthine fluids but is reversible. The Ramsey Hunt symptom is considered by Lindsay to indicate toxic labyrinthitis. Infectious diseases, such as meningitis, the more recently considered virus invasions, measles, German measles, influenza and mumps, are causative agents, and meningoencephalitis of typhoid occurring in spite of vaccination is not to be ignored. Even smallpox vaccinations occasionally crop up as a factor, and cases have been reported in which the condition followed inoculation to prevent typhus. Various conditions with protean manifestations, such as syphilis, multiple sclerosis and syringomyelia, must not be forgotten. Traumatic involvement of the labyrinth has become familiar to all through increasing industrialization and the experience of two world wars in one generation. Dr. Stacy Guild took up the question of ear protection from the standpoint of small arms; Dr. Samuel Watkins and I carried on experiments at the Naval Proving Ground at Indian Head with heavy guns during the first World War, and further work has been done by many others since that time. In working out the causes of deafness claimed to be service-connected or eligible for compensation, these factors must be intelligently evaluated. Concussions with little visible evidence of injury often disturb the function of the labyrinth for weeks or months. Grosser traumas involving the labyrinth, such as fractures, are more easily recognized and handled. Trauma due to noise, occupational deafness, is not uncommon, but more complete industrial studies should be made.

Central Involvements.—Involvements extending into the brain stem were stressed in several communications and properly belong in this presentation. The nuclei of the ramus cochlearis and the ramus vestibularis, the cerebellar vestibular nuclei, account for many conditions. Circulatory conditions in the striae vascularis are emphasized by many observers. With regard to the cerebral rather than the vestibular area, the experiments of Herberts in Sweden with anaphylactic shock in guinea pigs are of interest. Nystagmus and other symptoms commonly accepted as vestibular took place after removal of both labyrinth and cerebellum and were considered due to release from the vestibular ganglia in the medulla and the pons.

Degenerative changes in the vascular supply or vascular accidents due to old age or hypertension, as well as menopausal or other glandular imbalances, are not uncommon and are widely known as causative factors. Symptoms attributed to an end organ may be central and not labyrinthine in origin, and some workers have gone so far as to consider all nystagmus central rather than peripheral.

Meniére's Symptom Complex.—Prosper Meniére has attained immortality by precipitating more arguments and causing more study of the inner ear and its functions than anyone in specialized medicine, with the possible exception of Koch in bacteriology. While Koch's postulates are generally accepted and subject to proof, Meniére's name has become a cloak to cover a multitude of diseases that have only one thing in common—vertigo. Apparently his first case was that of a patient in a terminal stage of leukemia. His later work, however, shows a comprehensive grasp of pathology and symptomatology. In a later paper an attempt will be made to group and divide this amorphous mass in the terms of existing opinion.

An attempt to define the pathologic character of Memiére's disease has given rise to the term "hydrops of the labyrinth." Day and other observers have stressed the point that the condition is both vestibular and cochlear, and the pathologic sections so well shown by Lindsay and others demonstrate the pathologic picture. Nager, however, has observed cases in which no hydrops and no ectasia can be observed. Madelain Brown has classed Meniére's disease in the same group with migraine and suggested hereditary elements. Nylin of Upsala classified labyrinth disturbances into labyrinthitis, retrolabyrinthitis and central labyrinthitis. As etiologic factors in peripheral involvement he mentions disturbances of circulation and secretion and the metabolism of salts, proteins, vitamins, hormones and fluids. Among our workers, Day and Lindsay come immediately to mind as exponents of more or less similar school of thought. A quite different approach is that of Miles Atkinson, who has stressed the histamines and vitamins. Williams, at the Mayo Clinic, is collecting remarkable data on this subject. In general, my impression is that allergy, unless intrinsic, was somewhat deprecated in England, continental Europe, Australia, and South Africa, although here and in Canada it has been credited with a more important role. Some authors of the Italian school are convinced that circulatory anomalies with later sclerotic changes are a definite factor in causation.

Some replies indicated belief that a virus is responsible, not as a secondary manifestation or sequel but in the form of selective invasion. One reply (from Honolulu) stressed the poinnt that "waves" of patients with symptomatic Meniére's disease were being seen and reported that the condition prevailed in other offices at the same time. The hydrops school of thought would logically endeavor to cut down the fluid accumulation; sodium deprivation, therefore, is associated with Furstenberg and Lathrop, among others. But the work of Madelain Brown, in which she gave salt and added sodium bicarbonate to increase the sodium ion concentration, with no detrimental or other effects, leaves one in doubt. Miles Atkinson, in his scholarly work, has made a good case for vitamins and allergies, but it seems that, on the whole, there is much confusion on the subject.

A number of otologists, particularly the older ones, are convinced that routine ear treatment, topical applications and inflation of the eustachian tubes, with attention to general health, will suffice.

Were the conception of the pathologic picture limited to the apoplectic hemorrhagic form described by Politzer, things would be simpler; there would be little to do and that little would be surgical, to relieve damaging pressure. It is logical, therefore, that in true cases of ectasia or hydrops so well illustrated in the slides of Lindsay and Day, surgical treatment is indicated.

In England destruction of a canal by alcohol injections after opening seems to be a fairly widespread procedure and is reported to be successful. Otherwise the most frequent method there seems to be ablation of an ampullar end, or the tearing out of parts of the membranous canal. Day's electrocoagulation is the most widely accepted method here. He has reported that bilateral aural involvement is almost unknown, and in his opinion this is a refutation of the allergic theory. An operation similar to Day's is destruction of the membranous canal by a type of dental burr. Nylin has been carrying out a modification of Day's operative procedure.

Portmann's drainage of the sac evidently has not proved satisfactory in the hands of others.

There is lack of agreement with reference to the tinnitus, which may persist after the procedures mentioned Operations for total destruction of both the cochlear and the vestibular apparatus are exemplified by the work of Dandy. His resection of the eighth nerve, partially or *in toto*, with preservation of the function of the cochlear part, was mentioned in some of the replies, but apparently it is not used as frequently as formerly, though it was reported from the University of Virginia to be in use. The last operation of Lempert, opening both the round window and the oval window to get rid of tinnitus as well as vertigo, has been well reported.

The old operation of ossiculectomy for tinnitus has been modified and is performed in England. The Rosen type of operation on the tympanic plexus, with its easier surgical approach, has its advocates and would seem to be a simpler procedure. It is interesting to note that years ago Crocket of Boston, among others, freed the foot piece of the stapes from the oval window or did an ossiculectomy for tinnitus. An approach through the sympathetic nervous system, in which one operates on the stellate ganglion to relieve vertigo and tinnitus, has been advocated by Garnett Passe.

A report from a Western naval hospital recorded the unexpected amelioration of tinnitus and vertigo in a hypertensive patient who had undergone splanchnicectomy

Destruction of the labyrinth by streptomycin has been advocated, but the possibility of involvement of the central nervous system has caused it to go into disuse The so called broad base shown by children in their walking after taking large doses demonstrates its effect on the inner ear

SUMMARY

1 Great changes have taken place in otology since the sulfanilimides and antibiotics became available

2 The increase in toxic agents and their added importance in modern life must be considered

3 The surgical treatment of otosclerosis has been stabilized and conventionalized

4 Distinction between peripheral and central nervous factors is difficult

5 A reconsideration and reclassification of the group of conditions classed as Meniere's symptom complex is desirable

SUMARIO

1 Grandes mudanças tem occorrido em otologia desde que as sulfamidas e os antibioticos foram utilizados

2 O aumento de agentes toxicos e sua importancia adicional na vida moderna devem ser considerados

3 O tratamento cirurgico da otosclerose tem sido estabilizado e convencionado

4 A distinção entre fatôres centrais e perifericos e dificil

5 A reconsideração e reclassificação do grupo de condições classificadas como syndrome de Meniere e recomendavel

ZUSAMMENFASSUNG

1 Seit dem Aufkommen der Sulfanilamide und der Antibiotika sind auf dem Gebiete der Ohrenheilkunde grosse Veraenderungen eingetreten

2 Die wachsende Anwendung von toxischen Stoffen und ihre Bedeutung im Leben unserer Zeit muss in Betracht gezogen werden

3 Die chirurgische Behandlung der Otosklerose hat festgefuegte und allgemein anerkannte Formen angenommen

4 Die Unterscheidung zwischen peripheren und zentralen Faktoren ist schwierig

5 Eine Revision und Neueinteilung der als Meniere'scher Symptomenkomplex klassifizierten Krankheitszustaende ist wuenschenswert

RESUMEN

1 Grandes cambios han tenido lugar en otologia desde que se dispone de sulfanilamidas y antibioticos

2 Debe considerarse el aumento de agentes toxicos y su importancia consiguiente en la vida moderna

3 El tratamiento quirurgico de la otoesclerosis ha sido establecido y acordado

4 La distinción entre factores perifericos y centrales es dificil

5 Es de desearse una reconsideracion y reclasificacion del grupo de estados clasificados como complejo sindrome de Meniere

RIASSUNTO

1 Chemioterapici ed antibiotici hanno indotto grandi cambiamenti in otologia

2 Bisogna tener conto dell'aumento degli agenti tossici e della loro accresciuta influenza nella vita moderna

3 La cura chirurgica dell'otosclerosi si svolge ormai su schemi ben stabiliti

4 Difficile la distinzione fra fattori centrali e fattori periferici

5 E' opportuno un nuovo studio e una nuova classificazione del gruppo di condizioni patologiche classificate sotto il nome di sindromi di Meniere

RESUMÉ

1 Les sulfamides et les antibiotiques ont amene de graves changements en otologie

2. Il faut considérer l'importance des agents toxiques dans la vie moderne actuelle.
3. On a stabilisé le traitement chirurgical de l'oto-sclérose dans des données conventionnelles.
4. Il est souvent difficile de faire une partie précise des facteurs centraux avec les périphériques.
5. Il serait désirable de considérer à nouveau le syndrôme de Ménière pour en faire une classification nouvelle.

Echoes of the Past

XVII. RABELAIS, PHYSICIAN AND DRAMATIST

A monumental work in the world's great literature is *Gargantua and Pantagruel,* by Francois Rabelais. This masterpiece had great influence on subsequent French writers, among them Moliere, the great dramatist, who used a theme from Gargantua as the subject of his play *Malade Imaginaire.*

Infrequently the scientific importance of Francois Rabelais is acknowledged by historians. Even as the fact that he entered the medical school at Montpelier in the cassock of a secular priest is little known. When Rabelais entered the university (Sept. 17, 1530) he was at least 40 years of age. To obtain a licentiate's diploma he was required to hold lectures three months. He lectured therefore on the *Ars Parva* of Galen and the *Aphorisms* of Hippocrates.

During his university days Rabelais led the cheerful life of a typical student. He took part in the presentation of comedies and farces. He also wrote a satirical farce called *The Man Who Married a Dumb Wife.* Rabelais stayed only about eighteen months at Montpelier, although he continued on the list of faculty members. The exact reasons for the interruption of his studies are not known. It may have been due to the university regulations prescribing a period of practical training in medicine, since the study of theory alone did not fulfil the prerequisites for licensure. To obtain this practical training Rabelais became a resident physician in a hospital at Lyon. In 1532, he became the resident physician, he was a bachelor of medicine and a candidate for his license.

After securing his hospital experience Rabelais became famous as a great man of medicine. He became personal physician to the Archbishop of Paris, Jean Du Bellay. He accompanied the Archbishop to Rome in 1535 and 1536. He returned to Montpelier to receive his doctor's degree. Thereafter (1537 to 1538) he occupied one of the four chairs of medicine in the faculty.

Because of his interest in literature and some of his tenets he was accused of heresy. If it had not been for the assistance of his patron Cardinal Du Bellay, he might have had a tragic ending. Through the Cardinal's good office he became a parish priest at Saint Martin de Mendon, where he remained until his death at Paris (April 9, 1554).

Francois Rabelais is considered a pioneer in the experimental method of teaching medicine. He devised surgical instruments and invented a traction apparatus for reduction of fractures of the femur. This appliance was the basic idea which Ambrose Paré adopted in the treatment of fractures. Rabelais' knowledge of natural science and medicine awakened in him a respect for nature and the marvelous mechanism of the human body, which appears in all his writings. Although he often gave free rein to his gift for satire and the comic spirit in his writings, he was always cognizant of the great dignity which is, as he says, the outstanding ornament of medicine.

—*Bernard J. Ficarra, M.D., F.I.C.S.*

Heterotopic Pregnancy With Tubal Abortion

JOHN R. SPRAGUE, M.D., F.I.C.S.* AND
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HETEROTOPIC pregnancy is defined as "a double pregnancy, one intrauterine and the other extrauterine."[1] There are two types of heterotopic pregnancy. One is the compound type "in which the extrauterine has preceded the intrauterine pregnancy, the former having become quiescent as the result of resolution or lithopedion formation. The combined type is one in which the pregnancy occurs simultaneously in the intrauterine and extrauterine portion of the female's reproductive system."[1] "This is actually a binovular twin growing in the tube, rarely on the ovary, with the other ovum growing normally *in utero*."[2] The following case represents a combined type of heterotopic pregnancy.

REPORT OF CASE

On Sept. 6, 1950, a 21-year-old married white primipara complained of sudden severe pain in the lower part of the abdomen. She became nauseated and vomited several times. One of us (J. R. S.) saw her at the office and sent her to the hospital. Her last menstrual period had begun on June 27. It was normal and lasted five days. On August 25 a diagnosis of pregnancy was made by one of us (J. R. S.). She had had the usual childhood diseases. There had been no operations, accidents or diseases of the female reproductive tract. The family history was irrelevant.

Physical Examination.—The patient was in acute distress. Her temperature was 99.2 F., pulse rate, 90, blood pressure in millimeters of mercury, 100 systolic and 70 diastolic, respiration rate, 22, red blood cell count, 3,800,000 per cubic millimeters, hemoglobin, 68 per cent, white blood cell count, 12,500 per cubic millimeter, with 62 per cent polymorphonuclears, urine, normal. The ears, eyes and throat were normal. The heart was normal and the lungs were clear. There was tenderness in the right lower quadrant of the abdomen. A bimanual examination revealed pain about the uterus, with extreme tenderness around the right tube. It was difficult at this time to determine the size of the uterus, but a diagnosis of pregnancy had been made two weeks before. The preoperative diagnosis was ruptured ectopic pregnancy.

Operative Technic.—On September 7, with the patient under ether anesthesia, a midline incision was made in the abdomen. Free blood and many clots were observed. The uterus was enlarged to the size of a three months' pregnancy. The right tube had large blood clots in its fimbriated end. The tube was about 3 cm. in diameter in its outer half. A small placenta, 2 cm. in diameter, lay outside the tube. A right salpingectomy was done. The peritoneum and fascia were closed with interrupted No. 2 chromic catgut sutures, the skin was closed with interrupted chromic triple 0 sutures.

The postoperative diagnosis was intrauterine pregnancy and ectopic pregnancy with right tubal abortion. The patient made an uneventful recovery and left the hospital on September 17. One of us (J. R. S.) assisted her in normal delivery of a girl weighing 7 pounds and 8 ounces (3,401 Gm.) on April 9, 1951.

Review of the Literature.—Duverney[3] described the first case of combined pregnancy in 1708, the diagnosis being made at autopsy. The patient died of a ruptured ectopic pregnancy from the tube at the third month. Since that time there have been, according to Derby and Miller,[4] 414 cases. Gillian's report[5] and this case bring the total to 416.

Marten and Meyer[6] estimated the occurence of extrauterine and intrauterine pregnancy as 1 in 105 ectopic pregnancies. Since ectopic pregnancy occurs once in every 300 normal pregnancies, the inci-

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dence of hetertopic pregnancy is 1 in 30,000. Marten and Meyer[6] performed a hysterotomy on their patient. The fetus from the uterus was 3.7 cm. in length; the fetus from the tube measured 1.8 cm. They discussed the possibility of superfetation. It could be assumed that the smaller fetus was the younger, but, because of the heterotopic site, it might not have been predisposed to the normal rate of growth.

King[7] collected 221 cases in which the duration of the intrauterine pregnancy was recorded and found 88 cases, or 70.4 per cent, in which the pregnancy went to term. The duration of the extrauterine pregnancies, of which 125 were recorded, was as follows: 107, or 85 per cent, terminated in the first trimester; 7, or 6 per cent, terminated in the second trimester; and 11, or 9 per cent, terminated in the third trimester, with 8, or 6 per cent, of the total proceeding to term.

Moore and Sale[8] reported a case of extrauterine and intrauterine fetation observed conjointly with operation. The mother died, but the 2 children lived. The case was further distinguished by the fact that the intrauterine infant had congenital syphilis, although the extrauterine infant was normal.

DeVoe and Pratt,[9] after a study of the literature, reported that until 1940 the maternal death rate of such pregnancies was 19 per cent; but in the 69 cases studied by them from 1935 to 1948 the death rate was only 1.4 per cent. In their series 48 patients, or 70 per cent, were multiparas. In 54 cases the average duration of the extrauterine pregnancies before abortion was estimated at seven and seven-tenths weeks.

SUMMARY

A case of heterotopic pregnancy with tubal abortion is described, with a brief review of the literature.

Although heterotopic pregnancy is rare, is must be considered in all cases in which a diagnosis of ectopic pregnancy has been made, especially if there is no vaginal bleeding and or the uterus is enlarged.

RÉSUMÉ

On décrit un cas de grossesse hétérotopique avec avortement tubaire et on fait un résuméde la littérature. Quoique la grossesse hétérotopique soit rare, elle doit être considérée chaque fois qu'un diagnostic de grossesse ectopique a été posé, spécialement s'il n'y a pas d'hémorragie vaginale et /ou que l'utérus est augmenté de volume.

ZUSAMMENFASSUNG

Es wird ein Fall von heterotoper Schwangerschaft mit Tubenabort beschrieben und ein kurzer Ueberblick ueber die Literatur gegeben. Trotz des seltenen Vorkommens heterotoper Schwangerschaft muss an diese Moeglichkeit in allen Faellen, wo die Diagnose einer extrauterinen Schwangerschaft gestellt worden ist, gedacht werden, besonders wenn keine Vaginalblutung vorliegt oder die Gebaermutter vergroessert ist.

RIASSUNTO

Viene descritto un caso di gravidanza ectopica con aborto tubarico, e passata brevemente in rassegna la letteratura sull'argomento.

Benchè la gravidanza tubarica sia rara, essa deve venir presa in considerazione ogni volta che si fa la diagnosi di gravidanza ectopica, in particolare se non vi è emorragia vaginale e se l'utero è ingrossato.

RESUMEN

Se describe un caso de preñez heterotópica con aborto tubario, revisándose sucintamente la literatura. Aunque la preñez heterotópica es rara, debe considerársele en todos los casos en los que se haya hecho diagnóstico de preñez ectópica, especialmente sin hemorragia vaginal o útero c ecido.

SUMÁRIO

Um caso de prenhêz heterotopica com

abôrto tubário e descrito, com uma rapida revisão da literatura Ainda que a prenhêz heterotópica seja rara, deve ser considerada em todos os casos nos quais o diagnostico de prenhez ectópica tem sido feito, especialmente si não ha hemorragia vaginal e si o utero esta ou não aumentado de volume

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Intracardiac Valvular Surgery for Congenital Pulmonary Stenosis and Acquired Mitral Stenosis

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CHICAGO

IN 1913 Drs. E. Doyen and T. Tuffier planned and carried out valvular surgical intervention on the human heart. Doyen had a special tenotome made to incise the pulmonary valve in a 20-year-old patient suffering from a congenital cyanotic cardiac condition. The patient died a few hours after the operation. Doyen also "studied the operative technique which would be proper for the frequent stenosis of the mitral valve." Tuffier stated, "It is new techniques that we must look to in order to intervene on the heart and aorta for relief of stenosis of the aortic canal." He explored the mediastinum of a 26-year-old man with aortic stenosis and stated, "It was easy to explore the orifice index." This he did by pressure on the wall of the aorta with the index finger, downward to the valve. At this exploration he was not able to penetrate into the stenotic area but did describe its pathologic character as palpated through the wall of the aorta. Later, Tuffier accomplished dilatation of the stenosed aortic valve in the aforementioned manner with satisfactory results.

A number of surgeons attempted to bypass surgical intervention by using venous and arterial grafts to relieve stenosis of the mitral and aortic valves.

In 1924 Cutler, Levine and Beck reported extensive research in mitral stenosis and clinical attempts at its relief. Their review of the literature was extensive, and their unhappy results were discouraging to others interested in this problem.

In 1925 Souttar reported direct attack on the mitral valve by approaching the valve through the left auricular appendage and dilating the stenosed orifice with the index finger. The operation was of benefit to the patient. Thus, for many years, the importance of valvular lesions, experimental and pathologic, has been of keen interest to the medical profession, and attempts to relieve patients with these severely crippling diseases have been sincere and bold.

Stenosis of the Pulmonary Valve.—A deficient flow of blood to the lung may be caused by valvular stenosis or atresia of the pulmonary valve and may be associated with other anomalies of the heart, such as the tetralogy of Fallot, tricuspid atresia or an interauricular septal defect. Realizing the severe need for oxygen in patients with the tetralogy of Fallot and the importance of a patent ductus arteriosus for maintaining life, Dr. Helen Taussig encouraged Dr. Blalock to create an artificial ductus for these handicapped persons. The dramatic results have stimulated interest and extensive research in both congenital and acquired heart diseases. Potts, Smith, Doyen and Brock have likewise contributed greatly to the treatment of this condition. It is widely recognized now that if valvular stenosis is present the procedure of choice is the Doyen-Brock valvotomy. Brock, Bailey and their associates recommended direct attack on the infundibular types of pulmonary stenosis (Fig. 1) rather than the performance of a shunt operation such as the Blalock or the Potts-Smith procedure.

The diagnosis of deficient blood flow to the lung can be made whether or not

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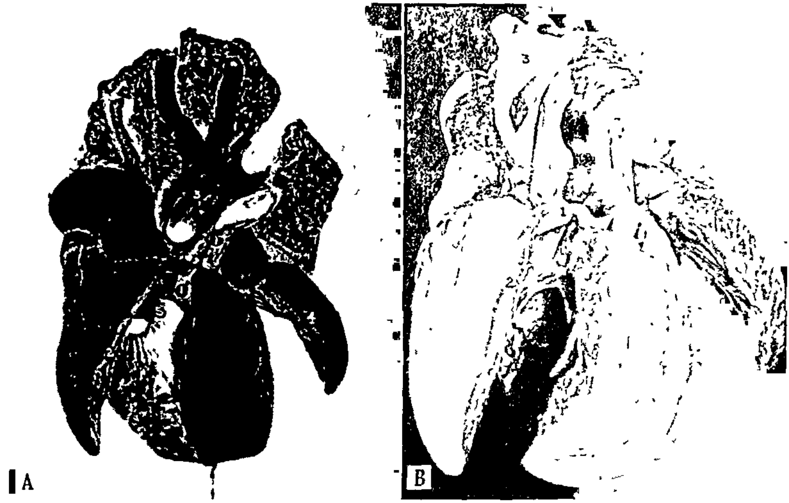

Fig. 1.—*A*, photograph of a model made directly from an autopsy specimen, showing the infundibular type of stenosis associated with the tetralogy of Fallot. Valvotomy is of no benefit. *1*, stenosed infundibular region and pulmonary artery; *2*, hypertrophied right ventricular wall; *3*, aorta; *4*, left ventricular wall; *5*, interventricular septal defect. *B*, model of an autopsy specimen in a case of congenital pulmonary valvular stenosis. *1*, stenosed valve cut across, showing the small opening in the center of the valve. Above the valve is seen the post-stenotic dilated pulmonary artery. *2*, bulging hypertrophied wall of the right ventricle. *3*, aorta. *4*, wall of left ventricle.

this deficiency is associated with cyanosis. Cyanosis is not present in a patient with stenosis of the pulmonary valve and an otherwise normal heart; cyanosis is present in varying degrees if the condition is associated with an interventricular or an interauricular septal defect.

Pulmonary valvular stenosis associated with an interauricular septal defect may or may not be accompanied with cyanosis. The degree of stenosis determines the severity of the symptoms. The essential observations are those characteristic of the tetralogy of Fallot, except that there is usually a loud systolic murmur in the pulmonary valve area, and a post-stenotic dilatation of the pulmonary artery as revealed by roentgenographic and fluoroscopic studies. The lung fields are deprived of the normal blood supply. Cardiac catheterization is of great help in preoperative diagnosis of this lesion. The Brock valvotomy is the operative procedure indicated.

I have encountered pulmonary valvular stenosis without a septal defect (Fig. 2) in patients 5 to 21 years of age. Patients with this condition are not cyanotic and the peripheral arterial oxygen content is normal, for the blood that has passed through the stenosed valve is normally oxygenated, and, as in the aforementioned problems, is not mixed with venous blood. The disability depends on the degree of stenosis and on whether or not there is an anomalous blood supply to the lungs by way of a patent ductus or other vessels. The patients are usually thin and easily fatigued. Roentgenograms reveal an en- [illegible] and an extremely

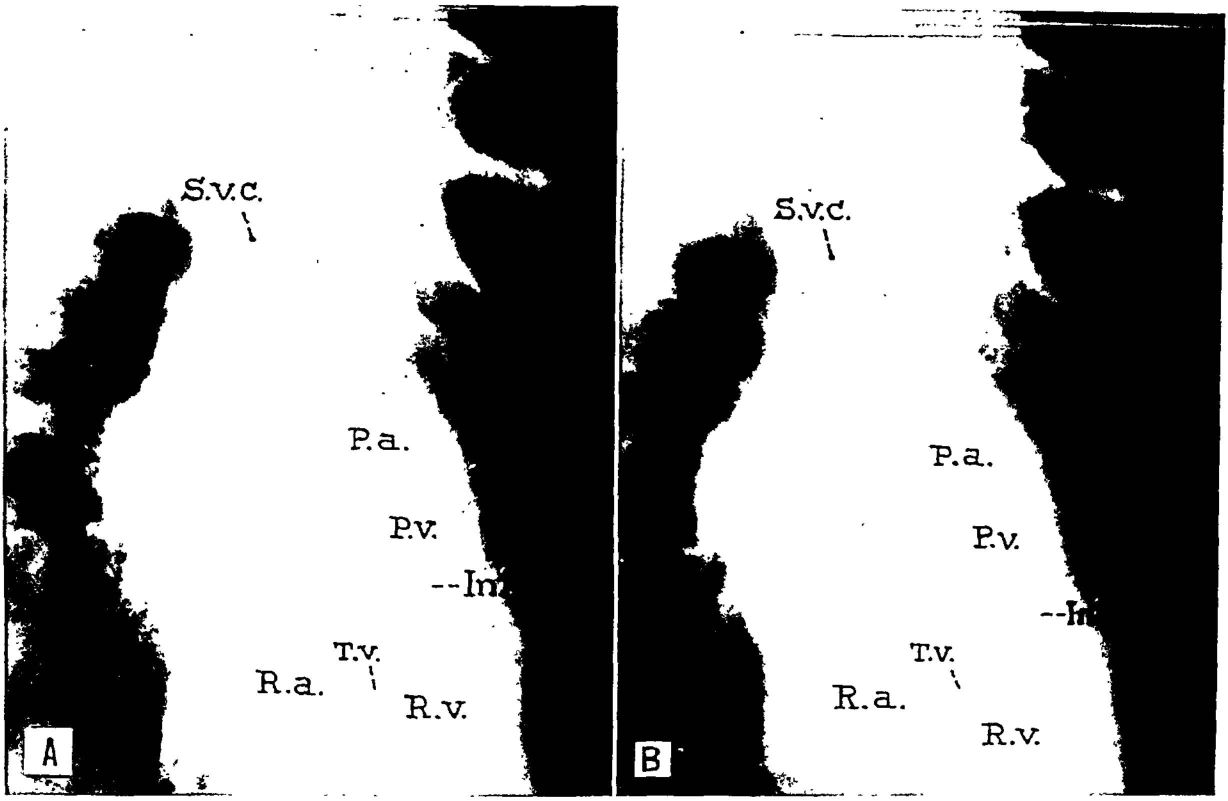

Fig. 2.—Angiograms of pulmonary valvular stenosis (no septal defects). The two right oblique angiocardiograms, those of a 21-year-old woman, were taken one-half second apart. The diodrast is seen passing through the superior vena cava to the right auricle; the shadow of the tricuspid valve is seen, and the right ventricle contains dye. The infundibular region in angiogram *A* appears stenosed and has an hour-glass configuration. The shadow of the pulmonary valve and the markedly dilated pulmonary artery are seen. Angiogram *B* shows the infundibular area filled with dye and offers a good demonstration of the poststenotic dilatation of the pulmonary artery. The importance of multiple angiograms taken in rapid succession is well demonstrated. S.v.c., superior vena cava; R.a., right auricle; T.v., tricuspid valve; R.v., right ventricle; Inf., infundibular area; P.v., pulmonary valve; P.a., pulmonary artery.

dilated first portion of the pulmonary artery but an "anemic-appearing" lung field. The electrocardiogram shows hypertrophy of the right ventricle. Angiocardiograms are an aid in identifying the pathologic condition (Fig. 3). Cardiac catheterization is of benefit for preoperative diagnosis and is essential in differentiating between this lesion and one associated with the interauricular septal defect not accompanied by cyanosis. Pressure studies during catheterization show an increase in the systolic pressure of the right ventricle to as high as 170 mm. of mercury and a sudden drop of systolic pressure in the pulmonary artery to 11 mm. of mercury. My associates and I encountered this in a girl 11 years of age. The required operation is valvotomy. To date (Fig. 4), 14 valvotomies have been performed without a death and with increasingly satisfactory results.

Mitral Stenosis.—In 1902 Sir Lauder Brunton wrote, "Mitral stenosis is not only one of the most distressing forms of cardiac disease, but in its severe forms it resists all treatment by medicine. . . . The risk which an operation would entail naturally makes one shrink from it, but in some cases it might be well worthwhile for the patients to balance the risk.

"The first question that arises is whether the mitral orifice should be enlarged by elongating the natural opening or whether the valves should be cut through their middle at right angles to the normal opening. I think there can be little doubt that the former would be the better plan, but the latter is the more easily performed.

"The good results that have been obtained by surgical treatment of wounds in the heart emboldens one to hope that before very long similar good results may be obtained in cases of mitral stenosis."

Cutler, Levine and Beck in 1924, Smithy in 1950, and others have demonstrated that cutting the stenosed valves (Fig. 5) "in the middle at a right angle to the normal opening", or removing a portion of the valve at this site, causes mitral regurgitation, which is not beneficial to the patient. Souttar, Bailey, Glover and O'Neill have demonstrated (Fig. 6) the validity of Brunton's opinion that the best plan for surgical intervention would be to "elongate the natural opening." Bailey applied the term "commissurotomy", Harkens the term "valvuloplasty". Their objective—to elongate the natural orifice—is the same, though the technical manner in which this is accomplished varies slightly. The procedure is proving satisfactory for relief of this "most distressing cardiac disease which resists all treatment of medicine."

Mitral stenosis is a late complication of rheumatic fever or allied diseases. If surgical intervention is to be attempted, there must be no evidence of rheumatic fever or intravascular infection. Mitral stenosis must be the predominant lesion as manifested by hypertension of the pulmonary artery and hypertrophy of the

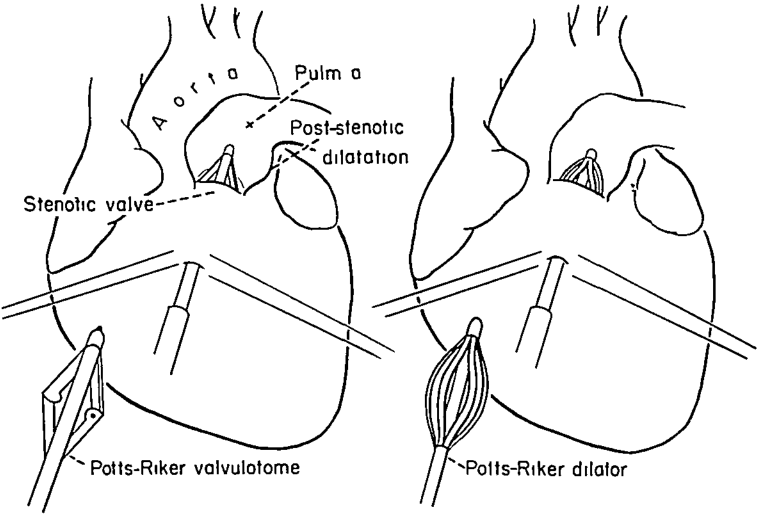

Fig. 3—Drawings to show the use of the Potts-Riker instruments in performing the Doyen-Brock pulmonary valvotomy. Fourteen operations have been performed without a death and with satisfactory results.

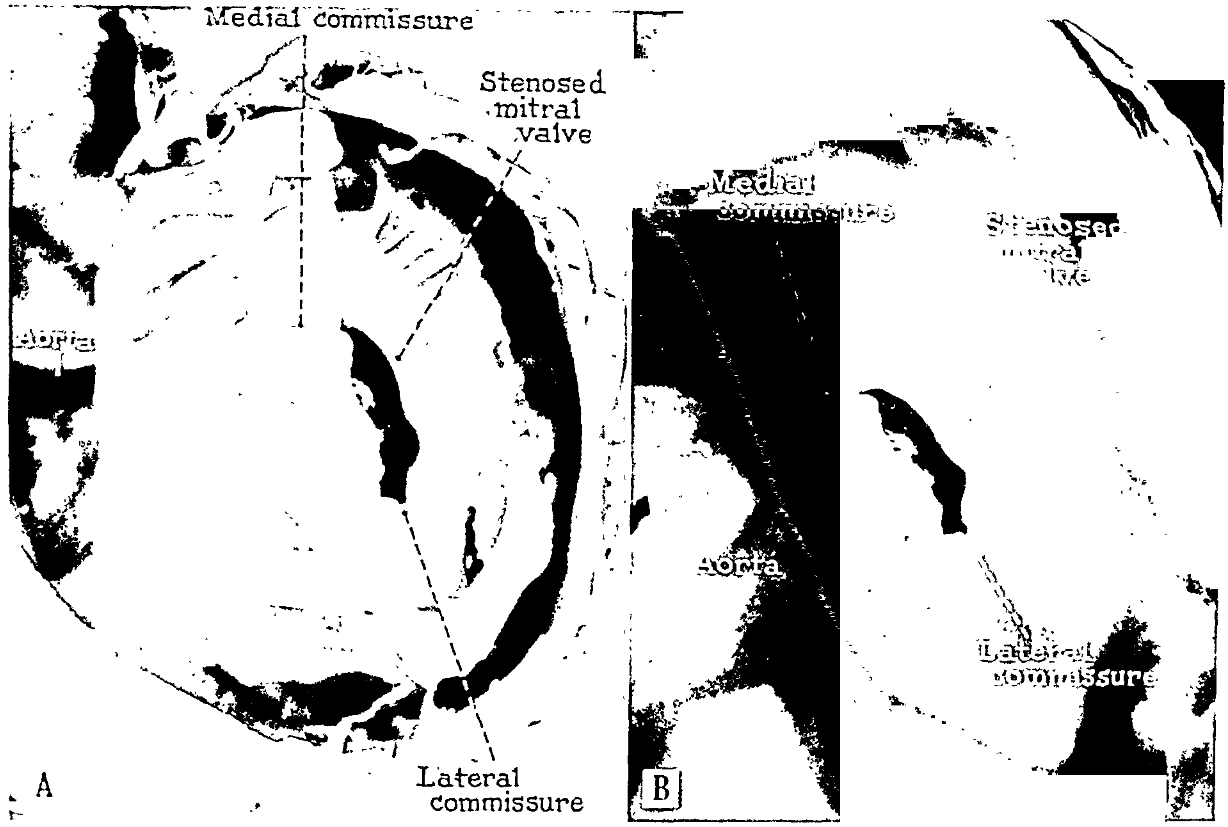

Fig. 4.—*A*, photograph taken from the ventricular side of the mitral orifice, showing some of the difficulties of the ventricular approach as used by Cutler and others. Cutler caused insufficiency to develop by removing a segment of the valve. Injury to the papillary muscles was difficult to avoid. *B*, photograph of stenosed mitral valve taken from the auricular side. The valve is transluminated and shows the fishmouth opening and the commissures. Bailey and his associates have shown that division of the commissures brings dramatic relief. The close proximity of the aorta is seen. Injury to the septum between the valves is fatal. The lateral commissure is divided to the lateral myocardium; the medial commissure is partially divided.

left auricle and the right ventricle. Clinically, pulmonary hypertension may be manifested by dyspnea, hemoptysis and cardiac decompensation. The electrocardiogram shows right ventricular strain and hypertrophy. Smithy, Bailey, Glover, Harkens and others have shown that operation on young adults yields the most satisfactory results if there is no disease of the other valves and if the patient has a good cardiac muscle reserve. Dr. James Campbell and his associates in the department of cardiovascular physiology at the Presbyterian Hospital have calculated muscle function and muscle reserve by cardiac catheterization studies. These calculations are most helpful in diagnosis and prognosis.

The technic employed in this hospital is a combination of the Souttar, Bailey, Glover and O'Neill and Harken methods (Fig. 7). The amputated auricular appendage is examined for thrombi. In 3 patients mural thrombi were observed, firmly attached to the wall of the auricle. It is believed wise to permit blood to flow from the auricle for a fraction of a second before inserting the finger, thus allowing thrombi to be liberated into the chest wound rather than pushed into the blood stream. The Bailey knife is carried into the left auricle with the right index finger by way of the left auricular appendage; the valve is carefully palpated, and the size of the lumen, as previously determined by cardiac catheterization, is tested by the distal end of the examining finger. In 6 of the 7 patients operated on, the commissure was readily palpated and could easily be divided by finger pressure in line with the commissue to the cardiac wall and medially for a few millimeters, allowing two and a half to three times the space required to admit the operating finger. In the seventh patient the commissure was obliterated by hard scar tissue and calcium deposits. Use of the knife, however, produced a 4 mm. incision. This was extended by finger pressure to allow an increase of two and one-half times in the size of the original orifice.

The 6 patients in whom the valves were easily opened also had cardiac reserves ranging from poor to good. They have made excellent recoveries. The seventh patient, edematous for six months and bedridden for one and one-half years, and with no cardiac reserve, died five days after the operation. The importance of cardiac muscle reserve was again confirmed. Microscopic studies of the amputated auricular appendages in all cases showed hypertrophy of the heart muscle fibers Rheumatic endocarditis was present in 2 specimens; mural thrombi were present in 3.

From my limited experience and from studying the results of others, I agree with Brunton that the risk is definite but is worth taking for the young patient

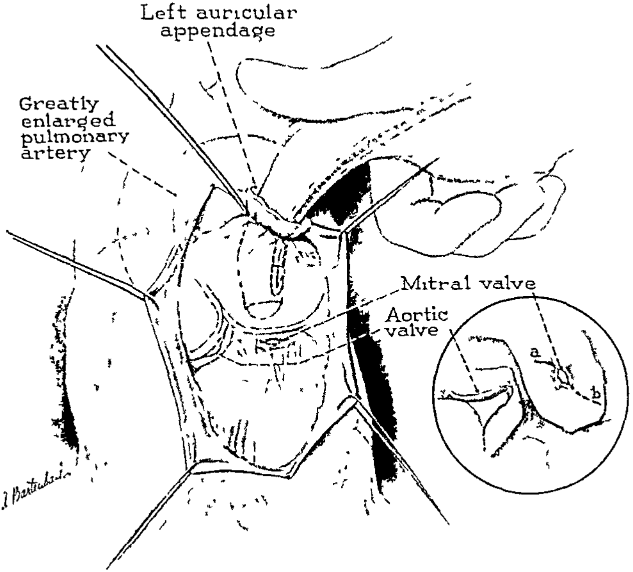

Fig 5.—Souttar-Bailey procedure for commissurotomy of a stenosed mitral valve. The finger and knife are inserted into the left auricle; a purse string suture is drawn about the base of the amputated auricular appendage, and the Bailey knife is carried between a double gloved finger. The valve is examined by the finger, the size of the mitral orifice determined and any associate pathologic change observed. The commissures are palpated and usually are easily divided by finger pressure; i [illegible] he [illegible] is used.

disabled by mitral stenosis. It is hoped that, in the future, prophylaxis and improved medical treatment of patients with early acute rheumatic fever will prevent the development of these acquired valvular lesions of the heart.

RÉSUMÉ

L'auteur, après avoir passé brièvement en revue l'historique de la chirurgie des valvules intracardiaques, en discute son usage pratique pour la sténose congénitale pulmonaire et la sténose mitrale acquise. Comme conclusion, il recommande d'en prendre la risque chez les sujets jeunes même si le risque est grand.

ZUSAMMENFASSUNG

Nach einem kurzen Ueberblick ueber die Geschichte der Herzklappenchirurgie eroertert der Verfasser ihre Anwendung bei angeborener Pulmonalstenose und bei erworbener Mitralstenose. Er kommt zu dem Schluss, dass bei der letzteren Erkrankung der Eingriff zweifellos ein Risiko bedeutet, dass man dies aber in Faellen von jungen Patienten in Kauf nehmen sollte.

RESUMEN

Se presenta una breve revista histórica de cirugía valvular intracardíaca, discutiéndose su aplicación a la estenosis pulmonar congénita y la mitral adquirida. Se concluye que, aun cuando la operación tiene en la estenosis mitral adquirida un riesgo definido, este debería afrontarse en el caso de un paciente joven.

RIASSUNTO

Dopo una breve introduzione storica sulla chirurgia valvolare intracardiaca, l'A. ne discute la pratica applicazione nella cura della stenosi congenita della polmonare e della stenosi acquisita della mitrale. Conclude che l'operazione per tale ultima malattia è rischiosa, ma tale rischio deve essere corso nel caso di pazienti in giovane età.

SUMÁRIO

Rapida revisão da cirurgia valvular intracardiaca é apresentada com discussão ulterior de suas aplicações á estenóse pulmonar congenita e estenose mitral adquirida. O autor conclúe que o risco deve ser tomado em caso de paciente joven embóra a estenóse mitral adquirida seja um definido risco.

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It is a misfortune that men can seldom be possessed of one kind of talent without desiring to belittle others If they are cunning, they cry down force, if geometers or physicians, they write down poetry and eloquence, and men of the world, who do not imagine that they who excel in one kind can be ill judges of another order of talent, allow themselves to be prejudiced by their pronouncements So, when metaphysics or algebra are fashionable, it is the metaphysicians or the algebraists that make the poets and the musicians reputations, or contrariwise the ruling spirit makes the rest amenable to its jurisdiction and generally to its misjudgments

The world is full of men who impose on others through their reputation or their wealth if they admit us to a nearer view we pass at a bound from curiosity on their account to contempt, as sometimes a man is cured in a moment of his inclination for a woman whose favor he has eagerly besought

—VAUVENARGUES

Perforated Bowel with Inguinal Hernia

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A PATIENT with a hernia needs correction to avoid the acute surgical emergency that may arise as a complication. Incarceration or strangulation are frequent complications of hernia. Perforation of the bowel complicating a hernia, resulting from a blow to the abdomen, is relatively uncommon and may fail to be recognized because the possibility is not considered. Only 36 such cases have been previously reported.

Perforation has also occurred in attempts to reduce incarceration or after direct trauma to the hernia. About 100 such cases have been reported.

This paper reports a case of perforation of the bowel following a blow to the abdomen in a patient with a hernia of ten years' duration. Perforation was indirectly related to the impact. It is presented as the thirty-seventh reported case.

REPORT OF CASE

Mr. D.R.D., aged 70, was seen at home on April 8, 1951, at 7:30 p.m., complaining of abdominal pain. He was groaning and held himself in the knee-chest position to obtain relief. The abdomen was rigid. He was removed to the hospital.

The patient had had a hernia for about ten years, which was easily reducible and did not interfere with his occupation (that of a cabinetmaker). The hernia was larger when the bladder was full.

About twenty-six hours before admission the patient had been standing at a bar. Two persons were scuffling; one was thrown, striking the patient in the abdomen with his head. The patient was immediately seized with pain. He left and found a hotel, and a doctor was called who manipulated the hernia and prescribed medication. The patient spent a sleepless night. At about noon the next day he made his way painfully to a bus station. After telephoning his daughter, he was brought 30 miles to her home. A physician was called, and the patient was removed to the hospital.

Examination showed the patient to be pale and thin. He was in acute abdominal pain. The heart and lungs were normal. The blood pressure in millimeters of mercury was 90 systolic and 60 diastolic. The abdomen was rigid, and some edema was observed in the left groin. He was given 1,000 cc. of 5 per cent dextrose in physiologic solution of sodium chloride by vein, which brought his blood pressure to 130 systolic and 80 diastolic. He was taken to the operating room, and a transfusion was started. With the region under spinal anesthesia, a left inguinal incision was made and the large hernia sac opened, disclosing an edematous dark grey lining. Serous fluid issued freely from the abdominal cavity. On withdrawal of the intestine a perforation of the ileum was noted. The operative incision was enlarged and the entire intestine examined. No additional perforation was observed, but loops of jejunum and ileum were dilated and edematous and covered with fibrinous exudate. Normal loops of bowel were observed in the right side.

The perforation was closed transversely with fine chromic catgut. An enterostomy (Witzel) tube was placed proximal to the point of perforation and brought through the omentum and to the surface through a stab wound above the incision. The peritoneal cavity was closed, and the left testicle and spermatic cord were removed. The wound was packed with iodoform gauze and partial closure of the skin accomplished with steel sutures.

After operation, a gastric (Levine) tube and the enterostomy tube were attached to a suction apparatus. Parenteral fluids and antibiotics, 2 Gm. of streptomycin and 2,000,000 units of penicillin, were given daily. Streptomycin was discontinued on the sixth postoperative day, and penicillin was reduced to 1,000,000 units a day. The temperature dropped below 100 F. on the fourth postoperative day and remained about 99 F.

Gastric suction was discontinued on the fifth day. The ileostomy tube was used alter-

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nately for infusion of nutrient fluid and for decompression. On the eighth day the tube was clamped off for several days and removed. On the twenty-second postoperative day the temperature suddenly rose to 101 F. and the patient complained of pain in the right subcostal area. Antibiotics were started; roentgen examination revealed a large subphrenic abscess. This was evacuated through an anterior incision on May 2, about 1,000 cc. of pus being removed. Culture showed E. coli, sensitive to terramycin. The temperature came down to normal by May 5 and remained normal throughout the patient's stay in the hospital. Packing and drains placed in the abscess cavity were successively removed in the next week, and the patient was discharged on May 16.

He returned for outpatient care. The inguinal wound healed firmly. A roentgenogram on June 30 showed the sinus in the right upper abdominal quadrant to be about 9 cm. long and about 3 to 4 mm. in diameter, with a slight dilatation at the deep end. Streptokinase-dornase was instilled in the sinus daily, and aluminum powder was dusted on the skin around the sinus.

The patient was seen in September, when it was noted that the sinus in the right upper quadrant was fully healed. An incisional hernia was noted at the scar in the left inguinal region. This hernia was repaired on October 3, and the patient was discharged on October 7.

COMMENT

Roentgen study revealed some evidence of perihepatic cellulitis within a week after operation, despite massive doses of antibiotics. These were withdrawn when a normal temperature was obtained. The prolonged use of streptomycin was avoided because of the possibility of neural damage. It is questionable whether continuous use of antibiotics could have prevented the formation of the abscess.

Sacrificing the testicle and removing the spermatic cord, which would slide in and out of the wound, permitted firm healing to occur. The patient is accepting retirement and will avoid physical effort.

Perforation of the bowel associa hernia was reported by Aird[1] in 1937. He reported 3 cases, bringing the total to 33, and an additional case in which direct trauma was caused by a truss. Other cases[2] have since been reported. This condition occurs in muscular men over 50 years of age and has not been observed in women. It has been reported only in cases of inguinal hernia. One theory of the mechanism (attributed to Bunge) states that sudden increase in intra-abdominal pressure caused by a blow against the abdomen is transmitted through the intestines and the pressure within the lumen is increased. The bowel wall within the abdomen is well supported and resists rupture except for that portion which lies against the hernia sac. The assumption is that the sudden protrusion of a portion of the bowel wall like a glove finger through the neck of the hernia sac ruptures the bowel at that point.

Another theory is that the small bowel may be fixed in position between two points, such as the ileocecal valve and the neck of the hernia sac. The bowel thus fixed is suddenly stretched by a change in posture, and may be ruptured by the excessive strain. Another point of fixation may be the ligament of Treitz and a hernia sac; or it may even be the root of the mesentery and the neck of the hernia sac. A peritoneal fold (Lane's kink) may fix the terminal portion of the ileum on the right side. This may explain the greater frequency of perforation with the right-sided hernia.

The soiled surface of the hernia sac and the profuse exudate in the abdominal cavity led to intestinal examination. There may be cases in which a rectus incision will give better opportunity for adequate exploration. This would logically follow a preoperative diagnosis of ruptured viscus.

SUMMARY AND CONCLUSIONS

Perforation of the bowel complicating hernia is presented as the thirty-seventh reported case. The patient's course is
cribed to roblems e -
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nism are offered. Intestinal perforation must be considered possible when a surgical emergency occurs in association with inguinal hernia.

RÉSUMÉ ET CONCLUSIONS

L'auteur rapporte le 37e cas de perforation intestinale comme complication herniaire. L'évolution du cas est rapportée en détail pour illustrer les difficultés encourrues. Il résume la principale théorie causale. On doit envisager la possibiliteé d'une perforation intestinale toutes les fois qu'il s'agit d'une urgence de hernie inguinale.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

Es wird ein Fall von Darmperforation, die als Komplikation eines Bruches auftrat, vorgestellt. Dies ist der siebenunddreissigste in der Literatur berichtete Fall dieser Art. Die auftretenden Probleme werden an Hand des Krankheitsverlaufes beschrieben. Theorien zur Erklaerung des ursaechlichen Mechanismus werden unterbreitet. Wenn im Zusammenhang mit einem Leistenbruch ein chirurgischer Notzustand auftritt, muss an die Moeglichkeit einer Darmperforation gedacht werden.

RESUMEN Y CONCLUSIONES

Se presenta un caso de perforación intestinal complicando hernia, considerándolo el trigésimo séptimo dado a conocer. Se describe la evolución para mostrar los problemas que se presentaron. Se mencionan las teorías del mecanismo causal. Debe considerarse posible la perforación intestinal cuando ocurre una emergencia quirúrgica asociada con hernia inguinal.

CONCLUSIONI RIASSUNTIVE

Viene riferito un caso di perforazione intestinale complicante un'ernia, il 37° della Letteratura. Descritta per esteso la osservazione in modo da illustrare i problemi incontrati e riportate le varie teorie etiopatogenetiche, l'A. conclude col suggerimento di pensare alla possibilità d'una perforazione intestinale ogni volta che insorga una sindrome addominale acuta in un paziente affetto da ernia inguinale.

SUMÁRIO E CONCLUSÕES

Perfuração de intestino complicando hernia é apresentada como o trigésimo setimo caso relatado. A sequencia do paciente é descrita para mostrar os problemas encontrados. Teorias do mecanismo causador são oferecidas. A perfuração intestinal deve ser considerada possivel quando uma emergencia cirurgica ocórre em associação com hernia inguinal.

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Dromoran* In General Surgery

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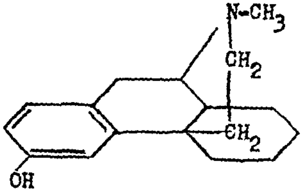
ADEQUATE relief of pain is a constant problem in all branches and specialties of medicine. The surgeon, in addition to performing his operations with skilled technic, must protect his patients from painful discomfort following the operation. Analgesia, however, should not be attained at the expense of maintaining normal physiologic functions, such as (1) adequate nutrition aided by good appetite and the absence of nausea and vomiting; (2) satisfactory elimination, without distention of the bowel, constipation or urinary retention, and (3) a cooperative mental and emotional attitude, without undue sedation or disorientation All of these features, plus adequate relief of pain, contribute toward the smoothness of convalescence and minimize the period of hospitalization.

Recently the new analgesic, Dromoran* (2-hydroxy-N-methyl morphinan), has been introduced. Its chemical composition resembles that of morphine, as can be seen from the following structural formulas:

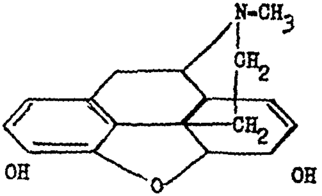


DROMORAN

Dromoran is completely synthetic[1] and is not an opium derivative as are the other available analgesics resembling morphine.

The analgesic potency and safety margin of Dromoran in animal studies[2] were encouraging and have led to an extensive clinical evaluation of the drug during the past two years.[3] Particular interest has been focused on the surgical field. Curreri[4] described its usefulness in the relief of pain following thoracic operations. More recently, Stoelting, Theye and Graf[5] at the University of Indiana, and Keutmann and Foldes[6] at the University of Pittsburgh—both groups from the departments of anesthesiology—have attested to the commendable features of Dromoran used preoperatively and postoperatively. These investigators have indicated the superiority of Dromoran in the relief of pain as compared to morphine, dilaudid and demerol.

Present Study.—The purpose of the present series was not to repeat such comparative studies but to gain experience with the use of this new analgesic in a general surgical practice. The 75 patients were unselected and taken serially from daily office and hospital cases. Standard routine procedures were not altered except for the introduction of the use of Dromoran as the postoperative analgesic agent. In evaluating the results particular attention was paid to maintenance of the normal physiologic functions previously discussed.



MORPHINE

Dromoran was employed as the analgesic agent in the following major operations: cholecystectomies, 9; appendectomies, 7; hysterectomies, 5; dilatations

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*Supplied by Hoffman-LaRoche, Inc, Nutley, N J through the courtesy of Thomas C Fleming, M D

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and curettages, 4; oophorectomies, 3 (2 with dilatation and curettage); salpingo-oophorectomies, 3; vaginal plastic repairs, 3; operations combining oophorectomy and appendectomy, 2; operations combining uterine suspension, oophorectomy and appendectomy, 2; abdominal perineal resections, 2; subtotal gastrectomies, 2; operations combining vaginal plastic repair and hysterectomy, 1; cesarean sections, 1; sigmoidectomies, 1 and mid-thigh amputations, 1. Minor operations in which the drug was used were inguinal herniorrhaphies, 10; tonsillectomies (adult), 3; hemorrhoidectomies (1 with rectal prolapse), 2; pilonidal sinus repairs, 2; orchidectomies, 2; incisional herniorrhaphies, 1; colostomy closures, 1, and colostomy revisions, 1.

Dromoran was employed also in the following miscellaneous conditions: inoperable carcinoma, 2 cases; intra-abdominal hemorrhage, 1 case; postpartum sepsis, 1 case; atypical pneumonia, 1 case; bleeding duodenal ulcer, 1 case, and coronary thrombosis, 1 case.

Dosage.—The dose varied from 2 to 5 mg. Both the dose and the frequency of administration were governed by the apparent analgesic needs of the individual patient. In all instances the drug was given subcutaneously.

Despite the fact that the average or standard dose described in the literature is 5 mg., the patients often obtained adequate relief from as little as 2.5 to 3.75 mg. There was reduction in the frequency of administration as compared to previous experience with morphine, demerol or pantopon. The average interval between doses was nine hours. Exceptions were the 2 cases noted above.

Of particular interest in this connection were the cases of inoperable carcinoma with advanced metastases involving the ribs and spine in 1 case and the pelvis and vertebral bodies in another. Pain in both cases was severe. An initial dose of 2.5 mg., increased to 5 mg. p.r.n., resulted in great relief until the time that the 2 patients expired. An additional patient (one of our own staff surgeons with liposarcoma of the thigh) obtained complete relief and comfort with Dromoran.

Anesthesia.—Spinal anesthesia, supplemented in about half the cases with intravenous sodium pentothal, was employed in all the operations except in 2 tonsillectomies performed on adult patients under cyclopropane anesthesia. The following table illustrates the effectiveness of Dromoran as an analgesic:

Degree of Relief from Pain	No. of Cases	Per Cent of Cases
Complete	65	86.6
Moderate	8	10.7
Fair to poor	2	2.7
	75	100

Moderate to complete relief with 2 to 4 injections in a twenty-four hour period was obtained in all but 2 cases, in which both of patients were very apprehensive and required Dromoran every four or five hours.

GENERAL COMMENT

Appetite.—No disturbance of appetite was noted in any of the cases other than that due to the primary operative procedure.

Nausea and Vomiting.—Side reactions of nausea and vomiting occurred in 5 cases as the anesthetic was wearing off. All 5 patients had received either cyclopropane or sodium pentothal. None of the patients in whom spinal anesthesia alone was used experienced any gastric upset.

Distention and Constipation.—A remarkable feature was the complete absence of postoperative distention and constipation in the entire series. It is both interesting and encouraging to note this same absence of constipation in the cases reported by previous investigators. In a much larger series of cases, depression of intestinal motility might be expected in isolated instances, since, Gruber, Lee and Gruber[6] described increased intestinal tone in their studies with rabbit intestines.

Retention of Urine.—Aside from those patients who were subjected to vaginal plastic repair, catheterization was required in only 1 case. The patient had undergone repair of a direct-indirect inguinal hernia.

Mental and Emotional Responses.—In general, the patients remained alert, comfortable and cooperative after the administration of Dromoran. In 1 case mild dizziness was noted immediately following the first postoperative dose.

Other Minor Side Effects.—No complaints were made of pruritis or diaphoresis, and no sensitivity phenomena developed in this series.

The adequacy of Dromoran in relieving pain without any significant interference with normal physiologic function was a valuable contribution to both early ambulation and a smooth and rapid convalescence. Dromoran also proved effective as analgesic for routine use in combating pain of nonsurgical origin, particularly that associated with inoperable tumors.

SUMMARY

Dromoran, a new synthetic analgesic, was administered to 75 patients. The majority were given the drug postoperatively; the remainder, for the relief of pain due to well-known painful disorders encountered in daily practice. The following features were noted:

1. Excellent and rapid analgesic potency as regards both completeness and duration.
2. Absence of postoperative abdominal distention.
3. Absence of constipation and urinary retention.
4. Absence of undesirable mental effects.

Dromoran is an effective, well-tolerated analgesic for relief of pain in routine surgical and medical cases.

RÉSUMÉ

On a donné le Dromoran—nouvel analgésique synthétique—chez 75 patients. La plupart des cas ont reçu le médicament post-opératoire; la balance des cas pour soulager les malaises courants.

On a fait les constatations suivantes:

1. L'analgésie est excellente et rapide; complète et de longue durée.
2. Il n'y a pas de distensions abdominales post-opératoires.
3. Pas de constipation ni de rétention urinaire.
4. Pas de désagréments mentaux.

Le Dromoran est un analgésique efficace et bien toléré pour soulager la douleur courante après les opérations et aussi en médecine.

ZUSAMMENFASSUNG

Dromoran, ein neues synthetisches Analgetikum, wurde bei 75 Kranken angewendet. Die Mehrzahl der Kranken erhielt das Mittel nach Operationen, die uebrigen zur Erleichterung von Schmerzzustaenden, die durch bekannte in der taeglichen Praxis vorkommende Stoerungen hervorgerufen waren. In der Hauptsache konnte folgendes festgestellt werden:

1. Ausgezeichnete und rasche Schmerzlinderung bezueglich der Staerke sowohl als auch der Dauer der Wirkung.
2. Keine postoperative Auftreibung des Leibes.
3. Keine Verstopfung oder Harnverhaltung.
4. Keine unerwuenschten seelischen Nebenwirkungen.

Dromoran ist ein wirksames, gutvertraegliches Mittel zur Erleichterung von Schmerzen in den ueblichen chirurgischen und medizinischen Faellen.

RESUMEN

Se administró a 75 pacientes Dromoran, un nuevo analgésico sintético. En la mayoría se administró preoperatoriamente, hebiéndose usado en el resto para aliviar el dolor en trastornos dolorosos bien conocidos de la práctira diaria. Se [illegible] los hechos siguientes: (1) ex-

celente y rápida potencia analgésica respecto a la perfección y duración del efecto; (2) ninguna distención abdominal postoperatoria; (3) ausencia de constipación y retención urinaria; (4) ausencia de efectos mentales indeseables.

Dromoran es un analgésico efectivo y bien tolerado para alivio del dolor en casos quirúrgicos y médicos rutinarios.

RIASSUNTO

A 75 pazienti, per lo più in periodo post-operatorio oppure affetti dalle comuni algie della pratica quotidiana, fu somministrato il "Dromoran", un nuovo analgesico di sintesi. I risultati furono i seguenti:

1. Azione analgesica rapida ed eccellente quanto a completezza e durata d'effetto.
2. Assenza di distensione addominale post-operatoria.
3. Assenza di costipazione e ritenzione urinaria.
4. Assenza di effetti psichici non desiderabili.

Il "Dromoran", perciò, può essere considerato un analgesico ben tollerato ed assai efficace nella cura delle sindromi dolorose che usualmente si incontrano nella pratica medica e chirurgica d'ogni giorno.

SUMÁRIO

Dromoran, um novo analgésico sintético foi administrado a 75 pacientes. A maioria recebeu a dróga postoperatoriamente; os restantes, para alivio de dôr devida á conhecidas desordens dolorósas encontradas na pratica diaria. Os seguintes quadros foram observados:

1. Excelentes e rapidos efeitos analgesicos referentes seja a amplitude ou duração do efeito.
2. Ausencia de distensão post-operatória abdominal.
3. Ausencia de constipação e de retenção urinária.
4. Ausencia de efeitos mentais indesejaveis.

Dromoran é um analgesico efficiente e bem tolerado para alivio da dôr em rotina cirurgica e em casos medicos.

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Endoscopic Photography in Proctology

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THE development of clinical photography has been retarded by the lack of proper equipment. This has led many investigators to improvise instruments for specialized purposes in this field. The need of a satisfactory method of producing endoscopic pictures has been apparent for many years. This has prompted me to design and construct a simple unit for the purpose. It has proved to be safe, accurate, reliable, easy to operate and economical.

A practical method is herein presented that will enable the proctologist to photograph lesions through the proctosigmoidoscope, and that may be applied to any other form of endoscopic photography. This procedure is accomplished with a 35 mm. candid camera by means of an auxiliary apparatus, which for the purpose of this article will be designated as the "clinical photo-cabinet." Positive color transparencies suitable for slide projection or prints are obtainable at minimum expense. These provide an accurate and permanent visual record of the progress of such diseases of the anus, rectum and rectosigmoid as hemorrhoids, polyps, hypertrophied papillae, ulcerative colitis, malignant tumors, etc. Photographs of this type are invaluable for lecturing, for use as teaching aids, or for illustrations in medical texts and publications to portray both the normal and the pathologic appearance of the lower portion of the bowel as encountered during routine proctosigmoidoscopy.

The primary prerequisite is a good camera. Since this will not be permanently attached to the supporting unit, it may be employed for general photographic purposes as well as for clinical scientific use. A precision instrument with an available assortment of essential accessories is advisable. It should be of the miniature type utilizing 35 mm. color film, which is relatively inexpensive.

In addition to the camera and housing, the following equipment will be required for close-up orificial photography: a 135 mm. lens, a light source, a set of extension tubes or portra (proxar) lenses, a sturdy tripod with a tilt head on a mobile base, and a mirror reflex housing with double cable release. The reflex housing is a periscope attachment that provides an eyepiece and a magnified ground glass focusing screen for viewing the photographic field, and is screwed into the lens aperture in front of the camera. However, this reflex device is unnecessary when one uses a camera with a ground glass focusing back or a single lens reflex camera.

The "clinical photo-cabinet" is a compact assembly unit of inexpensive design and construction that contains the camera and attached reflex housing, extension tube and lens. The cabinet is composed of bakelite, and its inner surface measures 7 inches in width and 16 inches in length. Alternately attached to the box are 6- and 10-inch proctoscopes made from thin brass cylindric tubing approximately 7/8 inch in diameter. A rigid lightproof connection between these components is effected by means of a special bayonet locking device on the flange at the proximal end of the speculum. A side opening on the cabinet permits a concentrated beam of light to be directed at the center of a mirror, which is mounted at an oblique angle in front of the lens. The light is then reflected forward through the speculum to illuminate the object to be photographed. A central aperture in the [illegible] 3/16 inch in diameter, affords

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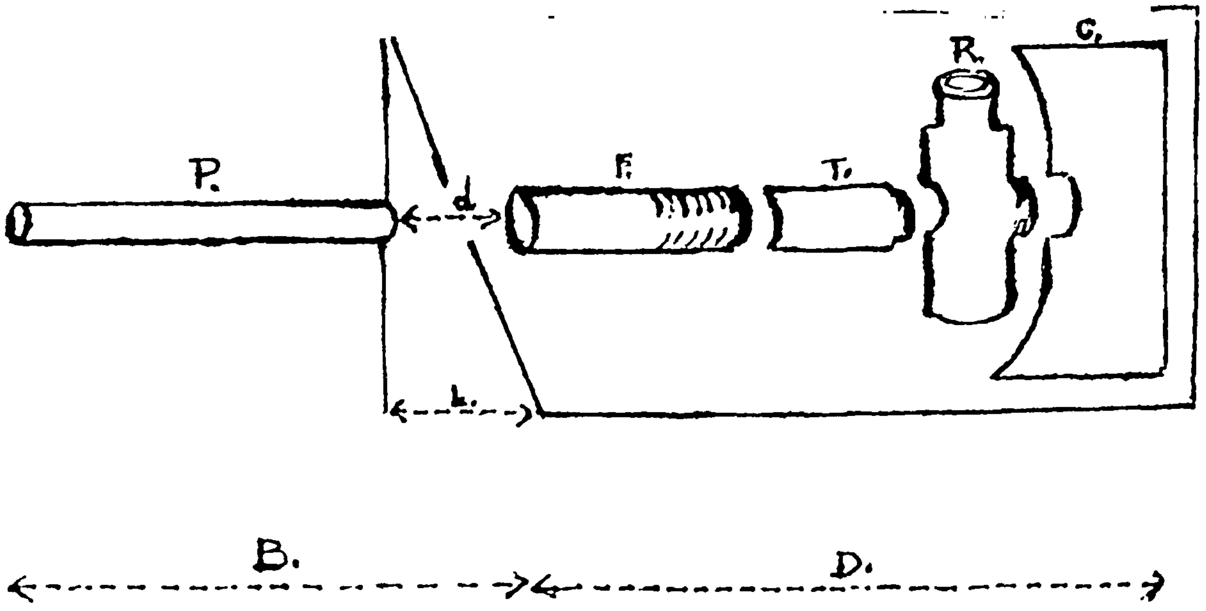
optical alignment of the lens and the image.

The color quality of the picture is dependent upon the relation between the type of illumination and the film used. Excellent results may be secured by using a tungsten type of color film balanced to a color temperature of 3,200 degrees Kelvin. This photographic material is accepted as having an emulsion speed of 12, calibrated according to the Weston exposure meter scale. When the film is exposed to a light source of 3,200 K, as furnished by most projection type bulbs, a proper color balance is effected. The 1,000-watt T-20 medium prefocus bulb has proved most satisfactory for this purpose. Furthermore, it supplies sufficient light for short exposures. The intensity of this illumination is markedly increased by the use of an inexpensive sharp focusing attachment or "snoot," which presents a diaphragm and a condensing lens system. In order to dissipate the heat emitted, the bulb should be inserted into a well ventilated fan-cooled lamp housing, which is mounted on an adjustable mobile stand.

Since the focal distance and angle of reflection of the light source aid in determining the amount of illumination of the subject and the resultant photographic exposure, it is essential that these factors remain constant. It is therefore advisable to align the spotlight at a fixed position in relation to the reflecting mirror. This is accomplished by approximating the distal end of the "snoot" to the cabinet window at an optimal angle through a projecting sleeve or reflector hood attached to the side of the box.

Glare from the inside of the proctoscope is eliminated by abrading the inner surface and applying a coat of flat black paint. One may also resort to rifling the inside of the tubular speculum before painting, or to the use of a polarized filter on the lens and the light source. Highlights may be produced by the moist glistening surface of the bowel wall if the mucous membrane covers the end of the scope at right angles. For this reason a slight tilting of the instrument is indicated. Light-reflecting materials, such as residual moisture, mucus, pus, blood and débris, should be removed by suction or wiping before the exposure is made.

Four inches (100 mm.) has proved experimentally to be the best practical distance between the proximal end of the scope and the camera objective.



To magnify the lesion as much as possible, a 135 mm. telephoto lens with an extension tube should be used. This objective is preferable to the short focal length lenses, which achieve greater depth of field but have the disadvantage of producing a minute image.

The insertion of suitable extension tubes between the reflex housing and the lens enables one to focus at close distances. When the mirror reflex housing is used in conjunction with the 135 mm. objective in long mount (coupled to the rangefinder) it is equivalent to an extension tube of 62.5 mm.

As illustrated in Figure 1, the following formula may be utilized to determine the distance between the lens and camera, and from this the length of extension tube required:

$$D = \frac{B \times F}{B - F}$$

$D =$ Distance between lens and image (camera).
$(D = F + T + R)$.
$F =$ Focal length of lens (135 mm.).
$T =$ Extension tubes.
$R =$ Reflex housing (62.5 mm.).
$B =$ Distance between object and lens.
$(B = P + d)$.
$P =$ Proctoscope length.
P-1 = 10 inches (250 mm.).
P-2 = 6 inches (150 mm.).
$d =$ Distance between proximal end of scope and lens (4 inches = 100 mm.).
$M =$ Mirror.
$L =$ Light aperture.
$C =$ Camera.

As shown in Figure 1, since F (135 mm.) and R (62.5 mm.) are known factors, then T may be derived. Thus, P-1 (10 inch or 250 mm. scope) at a distance of 4 inches (100 mm.) from a 135 mm. lens used in conjunction with a reflex housing (62.5 mm.) requires an additional 22 mm. in extension tubes. If a 6-inch scope (P-2) is used under similar conditions, a 96 mm. extension tube will be required. Photography of any other body orifice, as in otolaryngology or gynecology, merely requires a change of speculum and the appropriate extension tube.

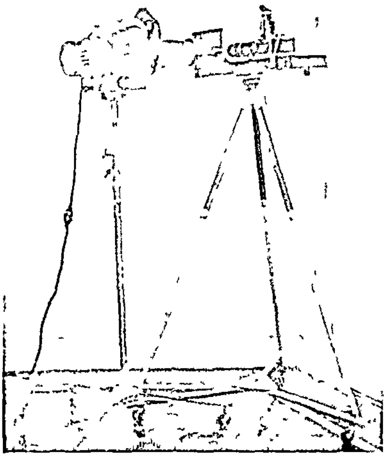


Fig 1—Apparatus and stands.

The base of the camera and the reflex housing rest on a sliding adjustable metal stage or platform which is grooved on a pair of parallel rails set in the middle of the containing unit. Lateral adjustment is fixed by means of an Allen head screw. Forward motion of the camera support and its attachments on the track is controlled by a thumbscrew below. For this purpose a rack-and-pinion may be utilized to good advantage. In order to obviate the slightest jarring of the camera, an aperture is provided through the metal seat in line with the threaded receptacle of the base plate. A retaining screw-mounting, rotated by means of a knob, holds the camera rigid and is of importance in eliminating any movement which may throw the image off center. An adjustable universal tripod head supports the lens and is screwed into its socket. The base of this support is also attached to the ns of sli Thus

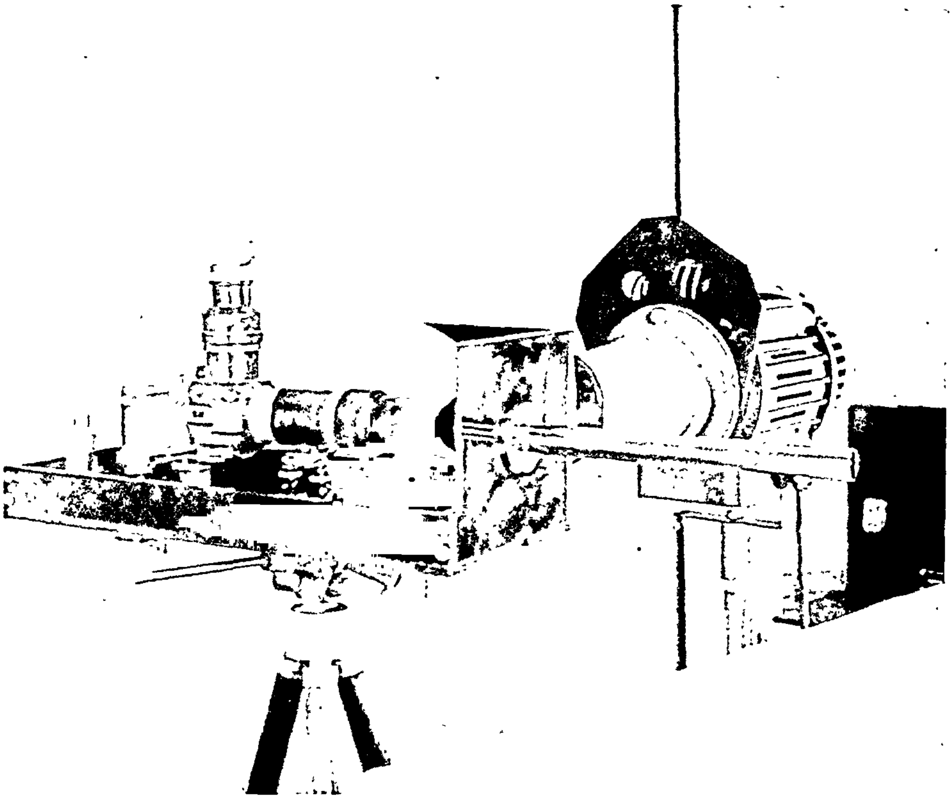


Fig. 2.—Close-up of apparatus.

the lens is kept rigid and strain is prevented at the juncture with the camera. In order to facilitate maneuverability the entire assembly is supported on a tripod by means of a threaded metal housing plate fixed to the bottom of the frame. The height of the stand is maintained and stability and mobility assured by means of a Y-shaped aluminum frame on movable casters supporting the base.

Good photographic results may be achieved by the following procedure: The cabinet contents are arranged in a standardized pre-set position indicated by an arrow marker. The proctoscope is then introduced in the routine manner, with the patient in the left lateral semiprone (Sims') position; the obturator is withdrawn and the instrument advanced visually with the aid of an auxiliary inspection light. When the desired level of the lesion is reached the unit is attached to the scope by means of the bayonet locking device. Critical focusing of the lens may be effected quickly if desired with the aid of the reflex housing, and then the lever of the double cable release is depressed. The latter serves a dual purpose. One lead deflects the reflecting mirror of the reflex housing from the line of optical axis, while the other trips the shutter an instant later. The photographic field is under direct observation up to the moment the shutter is snapped. Once the camera is set at a designated position in the cabinet, no time need be spent on focusing or other adjustment. In order to minimize any movement on the part of the patient it is advisable to make the exposure at the end of an expiration.

Ordinarily accepted exposure factors do not hold true in close-up work, in which a lens is extended beyond its normal distance from the film plane, as through the medium of a bellows or extension tube. Here the indicated and actual or effective f-opening and shutter speed vary. The increase in exposure time due to the use of extension tubes may be predetermined by the following formula:

$$X = \frac{B^2}{FL^2}$$

X = Increase of exposure time (exposure factor).

B = Lens to camera distance. (Focal length of lens + extension tube + extension of lens from infinity).

FL = Focal length of lens

Thus, for P-1 (10-inch scope) the exposure time is multiplied 2.65 times When P-2 (6-inch scope) is used the exposure factor is 4.72. No compensation need be made for exposure if supplementary front lenses are used. Here the indicated and effective f-value and shutter speed remain the same.

The lens aperture and exposure time are constant factors. For best definition and depth of field the iris diaphragm should be reduced or stopped down as much as is compatible with an exposure fast enough to eliminate movement and subsequent blurring. Therefore, for color photographs it is advisable to shoot at 1/30 second at f/11 with the 10-inch scope and at 1/20 second, f 11 with the 6-inch speculum. Of course, with panchromatic film the exposure time is markedly reduced In my opinion color photographs are essential to the recording of disease processes in their natural state. Black and white prints, color prints and enlargements of excellent quality may be reproduced from color transparencies, since the latter are free from any grain.

With the 10-inch sigmoidoscope the film image measures 12 mm. in diameter and with the 6-inch instrument 24 mm.

SUMMARY

A simplified and practical method has been presented for utilizing a 35 mm. camera in endoscopic proctologic photography by means of a compact inexpensive device, the "Clinical Photo-Cabinet". This procedure refers particularly to the pictorial recording in color of life size images of lesions through a 6-inch and a 10-inch speculum. However, the principles outlined may readily be applied to any

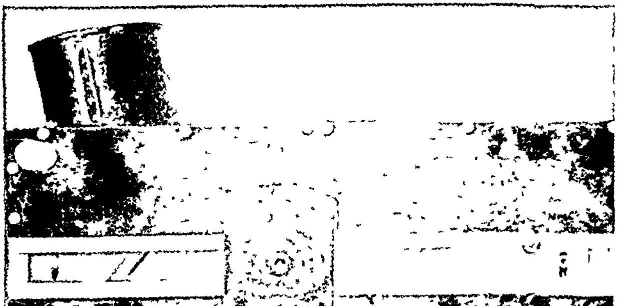


Fig. 3.—Under-side of cabinet.

other type of orificial photography of accessible body cavities.

The author does not claim that the basic equipment and procedure outlined represent the final word on this interesting subject. No doubt further improvements, refinements and modifications can and will be made. Any physician who applies himself to this wholesome and practical hobby will be amply rewarded in personal satisfaction, whether the end product is a fine finished apparatus or a unit made up of old lumber or a spare filing drawer. Good results may be achieved either by the doctor who has had some technical knowledge and experience in this field or by the neophyte who must learn its elemental principles.

Author's Note: I wish to acknowledge with deep appreciation the kind cooperation and assistance of Dr. Wigdor Markiewicz and Mr. Leon Kozin for helping to formulate and put into effect this photographic instrument.

RÉSUMÉ

Le "clinical photo-cabinet" est un appareil simple, pratique et peu couteux pour prendre des clichés endoscopiques proctologiques à l'aide d'un camera de 35 mm. Le procédé est pour utiliser un speculum de 6 et 10 pouces de long afin de photographier en dimensions normales et avec leurs couleurs naturelles, des lésions. On peut aussi appliquer cette méthode à d'autres usages.

Ce n'est pas le dernier mot; il y a encore de la place pour améliorer et perfectionner. Un médecin qui a le temps de s'adonner à ce mode de travail y trouve des compensations qui justifient ses labeurs, même un néophyte peut y trouver une compensation quand bien même il doit étudier par lui-même les éléments de la technique.

ZUSAMMENFASSUNG

Es wird eine vereinfachte und praktische Methode beschrieben, mit deren Hilfe eine 35 mm-Kamera zur endoskopisch-proktologischen Photographie verwendet werden kann. Der handliche und nicht teure Apparat heisst "Klinischer Photokasten" ("Clinical Photo-Cabinet"). Das Verfahren wird besonders zur Aufnahme von farbigen lebensgrossen Bildern von Kranheitsveraenderungen durch ein 15 cm oder 24.5 cm langes Spekulum angewendet. Die dargestellten Grundsaetze des Verfahrens koennen mit Leichtigkeit auf jede andere Form der Photographie zugaenglicher Koerperhoehlen uebertragen werden.

Der Verfasser behauptet nicht, dass mit seiner Apparatur und dem von ihm beschriebenen Verfahren schon etwas Vollkommenes auf diesem interessanten Gebiet erreicht ist. Zweifellos koennen und werden Verbesserungen, Verfeinerungen und Abaenderungen eintreten.

RESUMEN

Se presenta un método simple y práctico para utilizar una cámara de 35 mm., para la fotografía proctológica endoscópica mediante un dispositivo económico compacto, el "Foto-Gabinete Clínico". Este procedimiento se refiere particularmente a la fotografía en colores de imágenes de lesiones al tamaño con espejo de 6 pulgadas y de 10 pulgadas. Sin embargo, los principios señalados pueden ser aplicados desde luego a cualquier otro tipo de fotografía de orificios o de cavídades corporales accesibles.

El autor no considera que el equipo y procedimiento básicos señalados representen la última palabra sobre este interesante asunto. Se efectuarán sin duda mejoramientos, refinamientos y modificaciones. Cualquier médico que cultive esta sana y práctica afición quedará recompensado ampliamente, ya sea el producto final un aparato de magnífico acabado o una unidad hecha de madera vieja o un económico cajón archivero.

RIASSUNTO

E' presentato un metodo semplificato e practico per utilizzare una macchina

fotografica da 35 mm. per il rilievo fotografico endoscopico in proctologia a mezzo di un semplice e poco costoso apparecchio "Clinical Photo-Cabinet." Con un tale apparecchio attraverso uno speculum di 15 e 25 cm. e' possibile ricavare immagini a colori e grandezza naturali. Gli stessi principi possono essere applicati a qualsiasi altro tipo di fotografia cavitaria.

L'Autore non pretende che questa sia l'ultima parola in questo soggetto, egli e' certo che ulteriori miglioramenti e modifiche possono e saranno fatte.

SUMÁRIO

Um método pratico e simples é apresentado para se utilizar a camera de 35 mms. em fotografia endoscópica proctologica por meio de um aparêlho de pouco custo:— o "Gabinete Foto-Clinico." Este processo se aplica paraticularmente a fotografias coloridas em tamanho natural das lesões, atravéz de um espéculo de 6 ou de 10 polegadas. Os principios descritos, contudo, podem ser aplicados á gualguer outro tipo de fotografia orificial ou de cavidades acessiveis do corpo humano. O autor não pretende gue o eguipamento basico e o processo planejado representem a palavra final sobre este interessante assunto Futuros melhoramentos, aprimoração e modificacoes podem e serão certamente introduzidas. Qualguer medico gue se dedique a este agradavel e pratico passatempo será amplamente recompensado em satisfação pessoal, mesmo guando o produto final fôr um aparêlho finamente acabado ou uma unidade feita de madeira velha ou de uma gavêta em desuzo.

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Editorial

The History of Regional Enteritis

HYMAN I. GOLDSTEIN, M.D.
CAMDEN, NEW JERSEY

IN the "American Medical and Philosophical Register: or, Annals of Medicine, Natural History, Agriculture, and the Arts" conducted by a society of gentlemen, New York (Volume I, July 1810), John Wakefield Francis (1789-1861) of New York reported a "case of enteritis accompanied with a preter-natural formation of the Ileum." James Gregory Mumford (1863-1914) of Boston, in his "Narrative of Medicine in America," (1903) stated: "It is . . . an account of a patient who died of an acute septic peritonitis, due to strangulation of the ileum by a Meckel's diverticulum, coincident with an appendicitis." The case occurred in the practice of David Hosack (1769-1835) of New York, in December 1809. The patient was "a Captain D, aged about thirty-five, of slender habit of body. He was afflicted with all the symptoms characteristic of enteritis, accompanied with those of ileus; viz., an acute and constant pain in the whole abdomen. . . ."

The patient had been subject to repeated attacks of this kind, though less violent than the one under consideration, for several years. Necropsy showed the intestines highly inflamed and dark red; peritonitis was present. A portion of the small intestine, attaching itself to the umbilicus, formed a union between it and a part of the intestinal canal. This appendix was observed to be a diverticulum from the ileum. At the point of its union with the ileum it was enlarged and inflamed, in common with the upper portion of the small intestine; the remaining part was of a natural color. The ileum above this appendix was much inflated and extremely vascular, while the lower portion was greatly contracted and twisted round the diverticulum.

It is of interest to note here the case reported by R. C. Horn Jr. and J. E. Rhoads in the *Annals of Surgery* for February 1944—a case of "regional enteritis involving Meckel's diverticulum, with perforation of the diverticulum and fistula formation." This, perhaps, was similar to Hosack's case as reported by Francis in 1810 (Fig. 2).

Giovanni Batista Morgagni (1682-1771), in his *De Sedibus, et Causis Morborium* (Venice, 1761) reported cases of enteritis, with particular involvement of the ileum. Of interest also, are the cases reported by Morgagni in Epist. Anat. medica Liber III, XXXI, Articles 13-17, "De Morbis Ventris."

Brown and Donald of the Mayo Clinic, in the *American Journal of Digestive Diseases* for March 1942, also referred to Morgagni's reports in their paper "Regional Etneritis," although they gave the wrong date.

John Actuarius the Greek (died circa 1283), author of *De Methodo Medendi,* a treatise on the relations of mind and body, addressed to his tutor, Rakendytes, and a work on uroscopy, may have seen instances of enteritis of this type (*Opera Omnia,* Paris, 1556). A. C. Celsus [ca. 53 B.C.-7 A.D.] also wrote on this and kindred subjects: "De Intestinorum Morbis," "De Morbo Intestine Plenioris"; "De Lasvitate Intestinorum" and "De Tenesmo Intestinorum Morbo."

Jean Fernel (1497-1558), in his *Universa Medicina* (Book VI, Chapter IX, Paris, 1567), reported a case of acute perforative appendicitis, which may have been associated with regional ileitis.

Fernel discussed "Intestinorum Morbi Causae et Signa" (Book VI, Chapter IX) and "Intestinorum Symptomata, Horum Causae et Signa" (Book VI, Chapter X). "Intestina no admodum intemperi infestari solent: horum autem graviores morbisunt *obstructio, adstrictio inflammatio* abscessus and ulcus. Obstructio aut alimenti prolapsionem."

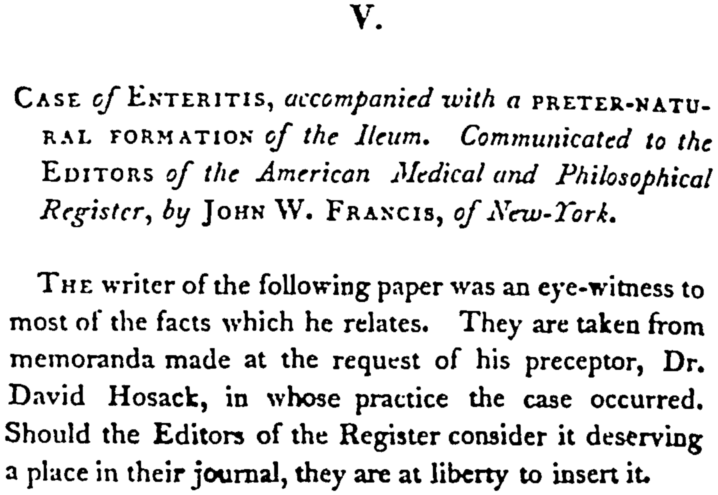
Johann Ernestus Huhn wrote *De Ileo: a Dissertation* (Leidae, Oct. 13, 1702), and mentioned "ileum fuisse, seu passionem iliacam," "coarctation," and "ileus oritur faecibus obduratis."

Johannes Schenck of Grafenberg (1530-1598) in his *Observationum Medicinalium* (Book III, Obs. 1-9, 349-354, Lugduni, 1644) wrote *De Ileo.*

Aëtius Amidenus (502-575) spoke of "De Abscessu in Intestinis" and of ulcerative and indurative and inflammatory conditions of the intestines (Tetrabibli III, Sermo I, Chapter XLIII).

I have previously called attention to the case reports of John Abercrombie (1780-1844) in his book "Pathological and Practical Researches on Diseases of The Stomach, The Intestinal Canal, The Liver, and Other Viscera of the Abdomen" (1828). Abercrombie met with cases of regional ileitis, both acute and chronic, as well as right regional colitis, left regional colitis and colitis confined to the descending colon and the rectum. One of his patients, a girl 13 years old (Case 102), suffered from regional ileitis. At necropsy "the lower end of the ileum, to the extent of about eighteen inches, was distended, thickened in its coats, externally of reddish colour, and internally covered by numerous well-defined ulcers. . . . The lungs and all other viscera were healthy." Abercrombie, referred to another case in which "a large portion of the ileum was distended, very much thickened in its coats, and internally covered with various tumors, induration and ulcers." "The phenomena connected with some of these cases," Abercrombie observed, "are very remarkable." . . . "The peculiarity of these cases seems to depend upon the disease being very limited in extent, *so as not to interfere materially with* the general action of the canal." In Case 62, that of a patient with ileitis, necropsy revealed involvement of the lower eighteen inches of the extremity of the ileum, and the caput coli, all of which were very thick and livid. Abercrombie's *Cases 90, 92, 93 and 94* were *instances* of acute ileitis: "acutely thickened and eroded ileitis." The higher parts of the small intestine were healthy. The other viscera were healthy. "The colon was collapsed and externally healthy; internally there were in several places, especially on the left side, patches of redness on its mucous membrane, but without any appearance of ulceration." In Case 47 necropsy showed great thickening and induration of the coats of the ileum at its termination in the colon, and the opening was so narrowed that it admitted only the point of the little finger. The ileum was distended and dark.

John Abercrombie
1780-1844



V.

CASE *of* ENTERITIS, *accompanied with a* PRETER-NATURAL FORMATION *of the Ileum. Communicated to the* EDITORS *of the American Medical and Philosophical Register, by* JOHN W. FRANCIS, *of New-York.*

THE writer of the following paper was an eye-witness to most of the facts which he relates. They are taken from memoranda made at the request of his preceptor, Dr. David Hosack, in whose practice the case occurred. Should the Editors of the Register consider it deserving a place in their journal, they are at liberty to insert it.

At a session of the College of Physicians in London on July 4, 1806, a report by Charles Combe (1743-1817) communicated by William Saunders (1743-1817), Fellow of the Royal College of Physicians, was read under the title "A Singular Case of Stricture and Thickening of the Ileum" (*Medical Transactions,* published by the College of Physicians in London, Vol. IV, Report III, 1813):

The patient, William Payne Georges, Esquire, "of a very nervous and delicate habit . . . ran an irregular intermittent fever from September 1805 to the date of his death, February 9th, 1806." The body was opened next day by Combe in the presence of Dr. Saunders. "The lower part of the ileum as far as the colon was contracted for the space of three feet, to the size of a turkey's quill." This was an early report of "regional ileitis."

A number of other interesting reports of cases of regional enteritis have appeared in the literature prior to the excellent description of this clinical entity by Crohn, Ginsburg and Oppenheimer, presented before the Section on Gastroenterology and Proctology of the American Medical Association at New Orleans on May 13, 1932. Their paper, "Regional Ileitis: A Pathologic and Clinical Entity," appeared in the *Journal of the American Medical Association* on Oct. 15, 1932, and presented a study of 14 cases. Thirteen of the patients were operated upon by Dr. A. A. Berg, of Mount Sinai Hospital, New York. The authors emphasized the fact that the terminal portion of the ileum alone was involved. "The process ascends the ileum orally from eight to twelve inches. The mesentery of the terminal ileum is found thickened and contains numerous hyperplastic glands."

"The fully developed hypertrophic process is as a rule limited to the distal 25 to 35 cm. of the terminal portion of the ileum, including the ileal side of Bauhin's valve and terminating rather abruptly at that point. The most advanced pathologic changes are present at the valve, which in some instances becomes converted into a rigid diaphragm with a small irregular opening." They speak of a "fibrotic mesentery," causing, by its shortening, a "darmstrasse." They state: "The mesentery of the affected segment is greatly thickened and fibrotic, as is the subserosal intestinal fat." They conclude that "medical treatment is purely palliative and supportive." Crohn, Ginzburg and Oppenheimer, by their interesting report on "Regional Ileitis" in 1932, have focused the attention of the profession on this heretofore overlooked and neglected clinical entity.

Reports of cases of this condition were

David Hosack, M D
1769-1835

previously recorded by Moore (1882); Koch (1903); Graser (1898); Le Dentu (1899, 1909); H. Braun (1909); T. K. Dalziel of Glasgow, 1913; Alexander Tietze, of Breslau, 1920; Eli Moschowitz and A. O. Wilensky, 1923; Harry E. Mock, 1931, and others. Since 1932 a great many reports have appeared in the literature, including those of Crohn (1935); Binney (1935); Ginzburg and Oppenheimer, Charles Mixter (1935); Ralphs (1938); Mailer (1938); Illtyd James (1938); Barrington and Norrish (1938); Robert Shapiro (1939); R. B. Phillips (1941); Sherrill and Hall (1940); Ginzburg and Garlock (1942); Kiefer (1943); Bonorino Udaondo and Centeno (1943); Oppenheimer, Marshall (1943); Fernandez Encarnacion (1943); Garcia and Diaz, Felsen, Colp, Crohn and Berg, Duncan (1944); Horn and Rhoads (1944); Howser and Vaughn (1944); Bargen (1944), and those by Koster, Kasman and Sheinfeld, Waugh, Grimes and Massie, Wilson Goinnan and Ashburn; Schepers of Johannesburg (1945), and Lick, Ravdin and Rhoads (1937).

Since their original report (1932) Crohn and his associates have found that "segmental enteritis and colitis" may involve any part of the small and large bowel, with and without "skip areas," and so one now finds reports of cases with involvement of the ileum, jejunum and colon

In their paper, Koster, Kasman and Sheinfeld *reviewed the publications on* intestinal granuloma and added 17 cases of their own, observed from July 1931 to December 1934. They observed their first case in July 1931 (*Archives of Surgery*, May 1936).

Bockus stressed the importance of the presence of much mesenteric fat in typical cases of chronic distal regional ileitis considering it pathognomonic. He has even emphasized the absence of this extension of mesenteric fat in the case reported by Combe and Saunders in 1806 in an effort to prove that the case was not an example of benign nonspecific ileitis.

Goldstein first called attention to the early reports of cases of regional ileitis by Combe and Saunders (1806) and by John Abercrombie (1828). Bockus fails to mention this fact. He also fails to state that the classic report by Crohn, Ginsburg and Oppenheimer (1932) presented before the Section of Gastroenterology of the American Medical Association, May 13, 1932, and all subsequent publications on regional ileitis by Crohn and his associates of the Mount Sinai Hospital, fail to mention "this feature" which is lacking in the description of the case reported by Combe and Saunders in 1806."

Bockus makes no mention of the cases reported by Abercrombie in 1828, Hossack and Francis in 1810, Graser in 1898, Le Dentu in 1909, Braun in 1909 and Dalziel in 1913, in his article *Chronic Stenosing Regional Enteritis.* Bockus and Lee (Sept. 1935) in their paper on "Regional Terminal Ileitis" do not mention this "pathognomonic mesenteric fat."

Practical Aspects of Doctor Patient Relations

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THE word patient is derived, as everyone knows, from the Latin "patio," meaning to suffer and endure. Irrespective of the degree of discomfort, all patients are sufferers both physical and mental. Neither can be distinct from the other. The doctor's reaction to suffering has some highly practical aspects.

In the advance of science, a step backward is often necessary to pick up and evaluate some truth or statement carelessly dropped. This backward step is both important and courageous. It is, in truth, in just such a backward step, after decades of extraordinary scientic advance in medicine and surgery, that the importance of the individual patient is rediscovered. Surely, it is he who benefits by our skills or suffers by our mistakes. *The final test of the worth of medical science is its effect on the patient.* Even in these crowded times of new discoveries and the development of more and more accurate means of diagnosis, we can hardly be excused if we forget the object of it all—the patient himself.

This professional generation has been taught that all scientific progress is the ready servant of the art of medicine. But the art is blind unless it is guided by understanding of the patient and of the significance to him of both his illness and his treatment. All of us practice psychotherapy. It is inevitable, in a relation between any two human beings, that they will produce some effect on each other.

It is this side of a doctor that accounts for the almost universal feeling that natural aptitude and sympathy alone can bring forth skill. Some persons, to be sure, have greater gifts of understanding and human helpfulness than others; but we know quite well that no man is *born* a good doctor. He becomes a master only by thoughtful and earnest effort.

Honesty of purpose and determination to succeed stand out in a doctor's attitude and create confidence and hope in the patient. Obviously, half-hearted vacillation creates doubt and anxiety. That miserable self-protective process of hedging on diagnoses by making every possible guess and sharing the resulting doubts with the patient is plain cowardice. If we are to produce the useful sentiment of hope in patients, we must be both hopeful and honest. If we are to inspire faith, we must be wholeheartedly determined to do our best. If we are to inspire courage, we must have and show it ourselves.

Over the years any doctor will meet an almost endless diversity of fears, sorrows, sufferings, sins and disappointed hopes, which most assuredly torment the body and derange its response. Increasing skill in penetrating beyond the physical ills to the spirit of the individual comes not from sympathy alone, but from constant pursuit of knowledge of his traits and trials and from a sincere effort to help him.

In this respect, to my mind, nothing gives such insight into the varied psychologic processes of mankind than wide reading; particularly fine romance, poetry and biography. The able novelist does much more than build up a plot; he portrays characters and their response to human experiences both good and evil.

Human personalities are so diverse that there are no blanket rules to follow. Some emotions, however, are conspicuous in all mankind so far as doctors are concerned. The chief of these is fear. Most persons who have reason to consult a doctor are apprehensive, and many are intensely so. Sometimes they have an especial dread of suffering. Sometimes it is the mere idea of seeing the doctor that frightens them. More often than not their fears are groundless or exaggerated, but they are nevertheless strong enough and distressing enough to color the picture they give the doctor of their ills.

Many patients are far more apprehensive and agitated than their outward appearance would suggest.

Today, "economic apprehension" also plays a part. The wage earner fears that he or members of his family will become incapacitated and thereby cause great economic hardship. Such a patient may regale the doctor with a long, involved story which has to do with the lady next door, the mother-in-law, what so-and-so said was the matter, and so on *ad infinitum*. The doctor contributes a great deal toward cure by lending a sympathetic ear.

A second universal trait is suggestibility, which is present to some extent in all of us. No matter what the disease or disorder may be, every patient is to some degree timid or pugnacious, sensitive or insensitive, intelligent or stupid, ignorant or informed, and will react to both his disorder and his treatment accordingly. Therefore, one must have a rough working idea of the patient as an individual personality, because it is not only the facts of the case but what the patient believes them to be and what he thinks they mean that constitute their significance to him. Prognosis, in the broadest sense of the word, is what interests him and what he reacts to emotionally. The treatment of any physical ailment requires patient consideration and understanding of these sensitive emotional reactions and skill in calling forth the more constructive responses.

No doctor should ever lose sight of the sensitiveness of patients to all therapeutic procedures. A process which to the doctor is an insignificant item of routine examination may appear to the patient as something horrible, or at least unexplainable and therefore full of dread possibilities. Every item has a personal significance to him. The test for the basal metabolic rate, for instance, impresses many patients as though it had all the attributes of an operation with a general anesthetic. In the presence of such anxiety tests are worthless. A simple explanation of the object and of the harmless nature of the proceeding will often suffice. "Take the patient as much as possible into partnership" is a good rule to follow.

Suggestion plays a part all the time, from the very first contact to the last. Its degree and nature depend on *how* a thing is said rather than on *what* is said. Guided by sympathetic understanding, honesty and tact, the doctor can avoid adverse suggestion throughout all diagnostic and therapeutic procedures.

Then there is the environmental effect of the office. The surroundings and atmosphere may be physically agreeable or disagreeable in terms of sight, sound, and odor. They may also be emotionally acceptable or repellent. They may seem gruesome; they may seem threatening, or they may seem hopeful and encouraging. A pleasant, quiet, cheerful and restful atmosphere in the waiting room, spic and span cleanliness, an air of antisepsis and efficient machines in the examining room reassure the patient and should never be neglected.

This applies as well to the personnel. An attractive, friendly, interested but professional nurse is a great advantage. Often the patient in telling his story will look at the attendant and appear to be telling her the story; this is an unconscious attempt to seeking friendship and sympathy.

Some definite objectives for a study and knowledge of the patient as an individual can be based on all these observations: the avoidance of unfavorable reactions and the fostering of favorable ones; the building up of courage and hope; the use of favorable suggestion and the avoidance of the opposite, and a constant effort to gain intelligent cooperation both in diagnosis and in treatment through mutual understanding and confidence.

Chapter News

International College of Surgeons

United States and Canadian Chapters

Arnold S. Jackson, M.D., F.A.C.S., F.I.C.S., Secretary

Southern California Chapter: The Surgical Section of the Southern California Chapter announces the election of the following officers:

Chairman of the Section, Justin J. Stein, M.D., F.A.C.S., F.I.C.S., Surgeon, Los Angeles Tumor Institute; Senior Surgeon, California Lutheran Hospital; Attending Surgeon, Malignancy Service, Los Angeles County General Hospital; Tumor Consultant, Veteran's Administration, West Los Angeles; Surgical Consultant Methodist Hospital; Assistant Clinical Professor of Surgery, C.M.E.

Vice-President, Eldon W. Tice, M.D., a well-known and outstanding surgeon of Los Angeles, and a staff officer of the Methodist Hospital.

Secretary-Treasurer, Dr. Lawrence Adams, an associate of Dr. Buell Sprague in Hollywood. Doctor Adams is one of our younger surgeons, but has just completed a successful year as Secretary of the Surgical Section of the Los Angeles County Medical Association. He is a staff member of the Hollywood Presbyterian Hospital.

Netherlands Chapter Organized: The Netherlands Chapter of the International College of Surgeons was organized on Saturday, October 21, 1951, with Prof. Dr. G. Chapchal of the University of Utrecht as President, Dr. Glazenburg as Secretary and Dr. von Gulick as Treasurer. These officers met again on November 25, in Amsterdam, to examine proposed new members and work out further plans for the Chapter's program of activities.

A fine spirit of cooperation and much enthusiasm attended the formation of this new Chapter, and an equally fine spirit of hospitality is evinced by a cordial letter from Dr. Chapchal, embodying the following invitation:

"Point 8 of our program dealt with the Madrid meeting of the International College of Surgeons in 1952. The members of the Dutch Chapter want to come to Madrid with their ladies and they would like to invite a delegation, before or after the Madrid meeting, to come to Holland for two days. During these two days a meeting will be held and there will be opportunity to instal the Netherlands Chapter. In any case the Dutch Fellows would be very glad to have the visit of a large delegation from the States and other countries. We propose to invite them to stay in our homes. If some of the members of the delegation like to stay more than two days they will be invited to stay in the homes of our Fellows as long as they like, to see Holland and to see Dutch surgical work. There will be, in any case, opportunity for sightseeing and also opportunity to see operations and to visit hospitals."

The United States Chapter, as well as the College at large, extends a hearty welcome to the Netherlands Chapter and looks forward to many years of mutually rewarding cooperation and shared endeavor.

Dr. Finsterer Honored: Prof. Dr. Hans Finsterer, F.R.C.S. (Hon.), F.I.C.S., has been awarded an honorary fellowship in the International Surgical Society.

Postgraduate Courses: Attention is again called to the postgraduate courses offered by the German Chapter of the International College of Surgeons, to precede the International Assembly in Madrid. The instructors in these courses are men of authority and distinction in their fields, and the opportunity to study with them is an outstanding one.

Members of the United States Chapter will also be interested in the Pre-Assembly Postgraduate Courses to be offered in Chicago in cooperation with the Cook County Graduate School of Medicine. Those who missed the announcement in the November Journal will find it on Page 817 of this issue. Details, as indicated, will be supplied on request.

Postgraduate Courses

Preassembly Courses Offered by the International College of Surgeons in Cooperation with the Cook County Graduate School of Medicine

The Seventeenth Annual Assembly of the United States and Canadian Chapters of the International College of Surgeons will be held in Chicago, September 2 to 5 inclusive, 1952 In keeping with the educational activities and objectives of the International College of Surgeons, arrangements have been made to offer in cooperation with the Cook County Graduate School of Medicine a two week Preassembly Postgraduate Course from July 14 through July 26

Since the course is designed primarily as an intensive review for members of the International College of Surgeons and those preparing for its examination, the number of registrations will be limited

The course will consist of illustrated lectures demonstrations, presentation of cases and surgical clinics The teaching faculty will be comprised of members of the attending and associate staffs of Cook County Hospital and prominent guest lecturers from other cities

In addition to general sessions for the entire group, there will be numerous section sessions for surgeons primarily interested in the following fields

General Surgery
Orthopedic Surgery
Gynecology
Urology
Proctology
Basic Sciences in Clinical Surgery

Requests for application forms or additional information may be addressed to the Secretary, Preassembly Postgraduate Courses, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10, Illinois

Courses Offered by the German Chapter, International College of Surgeons

The German Chapter of the International College of Surgeons is arranging a four week postgraduate course, open to all surgeons except those in the Iron Curtain countries The tentative date for the beginning of the course is January 14 1952 The following subjects will be presented

1 *Thoracic Surgery Given by Prof Dr Albert Lezius,* Director of Surgical Department, University of Hamburg and Assistants
   - a Modern methods of anesthesia in chest surgery, with practical demonstrations
   - b Bronchoscopy
   - c Bronchography
   - d Intubation
   - e Postoperative care of the Bronchial Tree
   - f Operative treatments of Carcinoma of the Lungs
   - g Operative treatments of Bronchiectasis
   - h Operative treatment of Pulmonary Tuberculosis
   - i Operative treatments of tumors of the Mediastinum
   - j Surgery of the Esophagus and Cardia
   - k Operative treatment of congenital and acquired cardiac disease (Fallot s Tetralogy, Ductus Botalli Coarctation of the Aorta Stenosis of the Aortic Valve, Angina Pectoris)

2 *Surgery of the Stomach Given by Prof Dr G I Konjetzny,* Director Emeritus, Department of Surgery University of Hamburg
   - a Pathologic anatomy and pathological physiology of gastric ulcer
   - b Operations on the stomach
   - c Evaluation of Dragsted s operation and sympathectomy

3 *Urologic Surgery Given by Prof Dr Hans T Junker,* Chief Urologic Clinic, Allgemeines Krankenhaus Barmbeck, burg Wandsbek

  a. Cystoscopy
  b. Pyelography
  c. Roentgen diagnosis of diseases of the Kidneys
  d. Endoscopic operative procedures in tumors of the Bladder
  e. Tumors of the Prostate (particularly hypertrophy)
  f. Prostatectomy
    1. Freyer's method
    2. Millin's procedure
    3. Harris' method
  g. Total cystectomy for carcinoma of the bladder
  h. Miscellaneous subjects.

4. *Medullary Nailing of Fractures of Long Bones: Given by Prof. Dr. Gerhard Kuntscher,* Surgeon in Chief, Kreiskrankenhaus, Schleswig.
  a. Theoretic Considerations of Medullary Nailing
  b. Indications for Medullary Nailing
  c. Bones of the Leg, Arm and Forearm
  d. Medullary Nailing in Operations for Pseudo-Arthrosis
  e. Operative Technic
  f. Film Presentation

Place: Postgraduate courses in Thoracic and Gastric Surgery will be held at the Surgical clinics of the University of Hamburg. The course in Urologic Surgery will be held at the Allgemeines Krankenhaus Barmbeck, Hamburg-Wandsbek.

Tuition: For those residing in Europe, the tuition will be DM 100 per course.

For those residing in the United States, Canada, Central America and South America, the tuition will be $100 per course.

Vierwöchigen Fortbildungskurs

Deutsche Chapter, International College of Surgeons

Das Deutsche Chapter des International College of Surgeons beabsichtigt, einen vierwöchigen Fortbildungskurs für junge Ärzte und Chirurgen zu halten. Folgende Hauptthemen sind vorgesehen:

1. Thoraxchirurgie: Prof. Dr. Albert Lezius, Direktor der Chirurgischen Universitäts-Klinik und Poliklinik, Hamburg-Eppendorf, und Mitarbeiter.
  a. Moderne Narkose und Anesthesieverfahren für die Thoraxchirurgie mit praktischen Uebungen
  b. Bronchoskopie
  c. Bronchographie
  d. Intubation
  e. Post-Operative Bronchialtoilette
  f. Die Operative Behandlung des Lungencarcinoms
  g. Der Bronchiektasen
  h. Der Lungentuberkulose
  i. Die Geschwülste des Mediastinums
  j. Die Chirurgie des Oesophagus und der Cardia
  k. Die Chirurgie der Angeborenen und der erworbenen Herzfehler (Fallot'sche Tetralogie, Ductus Botalli, Coarctation der Aorta, Pulmonalstenose, Mitralstenose, Aortenklappenstenose, Angina pectoris)
2. Chirurgie des Magens: Prof. Dr. G. E. Konjetzny, Direktor Emeritus der Chirurgischen Universitäts-Klinik und Poliklinik, Hamburg-Eppendorf
  a. Pathologische Anatomie und Pathologische Physiologie des Magengeschwürs
  b. Die Operationen am Magen
  c. Stellungnahme zur Operation nach Dragstedt und zur Sympathektomie
3. Chirurgische Urologie: Prof. Dr. Hans T. Junker, Chefarzt, der Chirurgische-Urologischen Klinik des Allgemeines Krankenhaus, Barmbek.
  a. Cystoskopie
  b. Pyelographie
  c. Röntgendiagnose der Nierenerkrankungen
  d. Operative endoskopische Eingriffe bei Blasentumoren
  e. Prostatahypertrophie
  f. Die Prostektomie nach Freyer, nach Millin und nach Harris
  g. Die totale Cystektomie beim Blasencarcinom
  h. Miscellany
4. Die Marknagelung von Frakturen Langer Röhrenknochen: Prof. Dr. Gerhard Küntscher, Chefarzt der Chirurgische Abteilung Kreiskrankenhaus Schleswig
  a. Theoretische Grundlagen der Marknagelung
  b. Indikationen die Oberschenkelmarknagelung
  c. Die Unterschenkelmarknagelung Oberarm und Unterarmmarknagelung
  d. Die Marknagelung bei Pseudarthrosenoperationen
  e. Operationstechnik
  f. Filmvorführungen

Die Zeit: Voraussichtlicher Beginn des Kurses

am Montag 14 Januar 1952

Ort des Kurses: Thoraxchirurgie und Magenchirurgie — Hamburg-Eppendorf, Chirurgische Universitäts-Klinik.

Urologie — Allgemeines Krankenhaus Barmbeck, Hamburg-Wandsbek.

Kosten: Kosten für Angehörige europäischer Staaten DM 100.

Kosten für Angehörige der U.S.A., der Mittel und Südamerikanischen und Canada Staaten 100 Dollar.

Die Kurse: Die Kurse bestehen in theoretischen Vorlesungen unde in täglichen Uebungen und Operationen.

Kursleiter: Prof. Dr. Albert Lezius: Prof. Dr. G. E. Konjetzny: Prof. Dr. Hans T. Junker: Prof. Dr. Gerhard Küntscher.

Anmeldungen bis 1 Januar 1952: Prof. Dr. A. Lezius, Direktor, Chirurgischen Universitäts-Klinik und Poliklinik, Hamburg-Eppendorf.

Cours Avancés Offerts par le Chapitre Allemand

du College International des Chirurgiens

Le Chapitre Allemand du Collège International des Chirurgiens organise un cours avancé de quatre semaines. Les sujets suivants seront traités:

1. Chirurgie Thoracique. Par Monsieur le Professeur Albert Lezius, Directeur de la section de Chirurgie a l'Université de Hamburg et ses Assistants.
   a. Méthodes modernes d'anesthésie en chirurgie thoracique, avec démonstrations pratiques
   b. Bronchoscipe
   c. Bronchographie.
   d. Intubation tracheale
   e. Traitement post-opératoire en matière d'arbre bronchique
   f. Traitement chirurgicale des cancers du poumon
   g. Traitement chirurgicale des dilatations des bronches
   h. Traitement chirurgicale de la tuberculose pulmonaire
   i. Traitement chirurgicale des tumeurs du médiastin
   j. Chirurgie de l'ésophage et du cardia
   k. Traitement chirurgicale des cardiopathies congénitales et acquises (Tétralogie de Fallot, Persistance du Trou de Botal, Sténose de l'Isthme de l'Aorte, Retrécissement de l'Orifice Aortique, Angine de Poitrine)
2. Chirurgie Gastrique. Par Monsieur le Professeur G. E. Konjetzny, Directeur Emérite de la Section de Chirurgie à l'Université de Hamburg.
   a Anatomo Pathologie et Physio Pathologie de l'ulcère de l'estomac
   b. Chirurgie gastrique
   c. Discussion de la valeur de l'Opération de Dragstedt et de la Sympathectomy
3. Urologie. Par Monsieur le Professeur Hans T. Junker, Chef de la Clinique d'Urologie à Allegemeines Krankenhaus, Barmbeck, Hamburg-Wandsbek.
   a. Cystoscopie
   b. Pyélographie
   c. Radiologie dans de diagnostic des maladies rénales
   d. La Chirurgie endoscopique des tumeurs de la vessie
   e. Les tumeurs de la prostate
   f. Prostatectomie
      1. Par la méthode de Freyer
      2. Par la méthode de Millin
      3. Par la méthode de Harris
   g. Cystectomie totale pour cancer de la vessie
   h. Sujets divers
4. L'Enclavage Medullaire des Fractures des os Longs. Par Monsieur le Professeur Gerhard Küntscher, Chirurgien Chef, Kreiskrankenhaus, Schleswig
   a. Considérations théoriques sur l'enclavage médullaire
   b. Les indications de l'enclavage médullaire
   c. Os de la jambe, du bras et de l'avant bras
   d. Le traitement des Pseudarthrosis par l'enclavage médullaire
   e. Téchnique opératoire
   f. Présentation de films.

Dâte: La dâte prévue pour le début du cours est le 14 janvier 1952.

Place: Les course avancés de Chirurgie Gastrique et Thoracique seront donnés à la Clinique Chirurcale de l'Université de Hamburg. Le cours d'Urologie sera donné à l'Allegemeines Krankenhaus, Barmbeck, Hamburg-Wandsbek.

Inscriptions: Pour ceux habitant l'Europe, l'inscription sera de 100 DM.

Pour ceux habitant les Stats-Unis, l'Amerique Centrale et du Sud et le Canada, l'Inscription sera de $100 par cours.

Les Cours: Les cours consisteront de demonstrations pratiques, de cours théoriques et de techniques opératoires donnés par les professeurs.

Les Directeurs: Les Directeurs des cours avancés sont: Messieurs Les Professeurs Albert Lezius, G. E. Konjetzny et hans T. Junker.

Les demandes de renseignements et les inscriptions seront recues jusqu'au le Janvier 1952, et devront être adressées à Monsieur le Professeur A. Lezius, Directeur de la Section de Chirurgie, Université de Hamburg, Hamburg, Eppendorf, Allemagne.

Cursos de Post-Graduado Ofrecidos por el Capitulo Aleman del Colegio Internacional de Cirujanos

El Capítulo Aleman del Colegio Internacional de Cirujanos esta preparando un curso de Post-Graduado de cuatro semanas de duración. La siguiente materi sera presentada.

1. Cirugía de Torax: Explicada por el Profesor Dr. Albert Lezius, Director del Departamento de Cirugía, La Universidad de Hamburgo, y por sus asistentes.
   - a. Metodos modernos de anestesia en cirugía de torax, con demonstraciones practicas
   - b. Broncoscopía
   - c. Broncografía
   - d. Intubación
   - e. Cuidado post-operatorio del Arbol Bronquial
   - f. Tratamiento quirurgico del Carcinoma del Pulmón
   - g. Tratamiento quirurgico de la bronquiectasia
   - h. Tratamiento quirurgico de la Tuberculosis pulmonar
   - i. Tratamiento quirurgico de los tumores del mediastino
   - j. Cirugía del esofago y cardias
   - k. Tratamiento quirurgico de enfermedades cardiacas congenitas y adquiridas (Tetralogía de Fallot, Coartación de la Aorta, Estenosis de la Valvula Aortica, Angina Pectoris)
2. Cirugía del Estómago: Explicada por el Profesor Dr. G. E. Konjetzny, Director Emerito del Departamento de Cirugía de la Universidad de Hamburgo.
   - a. Anatomía y fisiología patologica de la úlcera gastrica
   - b. Operaciones del estomago
   - c. Evaluación de la operación de Dragstedt y la simpatectomía
3. Cirugía Urologica: Explicada por el Prof. Dr. Hans T. Junker, Jefe de la Clinica Urologica, Allgemeines Krankenhaus Barmbeck, Hamburg-Wandsbek
   - a. Cistoscopía
   - b. Pielografía
   - c. Diagnostico Radiologico de las Enfermedades de los Riñones
   - d. *Tenicas operatorias* endoscopicas en tumores de la vejiga
   - e. Tumores de la prostata (Particularmente la hipertrofía)
   - f. Prostatectomía
     1. Metodo de Freyer
     2. Metodo de Millin
     3. Metodo de Harris
   - g. Cistectomía total en Carcinoma de la vejiga
   - h. Temas Miscelaneos
1. Aplicación Medular de Clavos en Fractures de los Huesos Largos: Explicada por el Profesor Dr. Gerhard Küntscher, Jefe en Cirugía, Kreiskrankenhaus, Schleswig.
   - a. Consideraciones teoricas sobre aplicación medular de clavos
   - b. Indicaciones
   - c. Huesos de la pierna, brazo y antebrazo
   - d. Aplicación de clavos en pseudo-arthrosis
   - e. Tecnocas operatorias
   - f. Presentación de Películas

Fecha: La fecha aproximada para el comienzo del curso es Enero 14, 1952

Lugar: Los cursos de post-graduado en cirugía de torax y estómago se llevaran a cabo en las clínicas, quirurgicas de la Universidad de Hamburgo. El curso en cirugía urologica se ofrecera en Allgemeines Krankenhaus Barmbeck, Hamburgo-Wandsbek.

Matricula: Para aquellos que residen en Europa, el costo será de DM 100 cada curso.

Para aquellos que residen en Los Estados Unidos, Canadá, Centro y Sud America, el costo será de $100.00 cada curso.

Cursos: Los cursos consistiran en demostraciones practicas diarias, conferencias y procederes quirurgicos realizados por los profesores y asistidos por los post-graduados.

Directores: Prof. Dr. Albert Lezius, Prof. Dr. G. E. *Konjetzny, Prof.* Dr. Hans T. Junker, Prof. Dr. Gerhard Küntscher.

Solicitudes de Matricula: Solicitudes de matricula para los cursos de post-graduados seran aceptadas hasta Enero 1, 1952 y deben ser dirigidas a la Profesor Dr. Albert Lezius, Jefe del Departamento Quirurgico de la Universidad de Hamburgo, Hamburgo-Eppendorf, Alemania.

Corsi per Laureati Offerti Dalla Sezione Tedesca dell' International College of Surgeons

La Sezione Tedesca dell' "International College of Surgeons" sta preparando un corso per laureati della durata di un mese. Saranno presentati i seguenti argomenti:

1. Chirurgia Toácica: Prof. Dott. Albert Lezius, Direttore della Clinica Chirurgica dell'Università d'Amburgo, ed í suoi assistenti.
   a.. Metodi moderni d'Anestesia in chirurgia torácica, con dimostrazioni pratiche
   b. Broncoscopia
   c. Broncografia
   d. Intubazione
   e. Cura postoperatoria dell'àlbero bronchiale
   f. Trattamento operatorio del cancro del polmone
   g. Trattamento operatorio delle bronchietasie
   h. Trattamento operatorio della tubercolosi polmonare
   i. Trattamento chirurgico di tumeri del mediastino
   j. Chirurgia dell'esofago e del cardia
   k. Trattamento operatorio delle cardiapatie congenite ed acquisite (Tetralogia di Fallot, Dotto di Botallo, Coartazione aortica, Stenosi della valvola aortica, Angina di Petto)
2. Chirurgia Dello Stomaco: Prof. Dott. G E. Konjetzny, Direttore Emerito della Clinica Chirurgica dell'Università d'Amburgo
   a. Anatomia e fisiologia patalogica dell'úlcera *gastrica*
   b. Interventi sullo stomaco
   c. Valutazione dell'intervento di Dragstedt e simpaticectomia
3. Chirurgia Urologica: Prof. Dott. Hans T. Junker, Capo della Clinica Urologica, Allgemeines Krankenhaus, Barmbeck, Amburgo-Wabdsbej
   a. Cistoscopia
   b. Pielografia
   c. Diagnosi radiologica delle malattie del rene
   d. Procedure operatorie endoscopiche dei tumori della vescica
   e. Tumori della prostata (particolarmente ipertrofia)
   f. Prostatectomia
      1. Metodo di Freyer
      2. Metodo di Millin
      3. Metodo di Harris
   g. Cistectomia totale nel carcinoma della vescica
   h. Argomenti vari
4. Trattamento Delle Fratture Delle Ossa Lunghe Con il Metodo Delle'Inchiodamento Intramidollare
   a. Considerezioni teoriche
   b Indicazioni
   c. Applicazioni all'arto superiore ed inferiore
   d Applicazioni in casi di pseudoartrosi
   e. Tecnica operatorie
   f. Prezentazione di radiogrammi

La Data: La data probabile dell'inizio del corso e il 14 Gennaio 1952

La Situazione: I corsi di chirurgia torácica e gastrica saranno tenuti alla Clinica Chirurgica dell'Università d'Amburgo. Il corso in chirurgica urologica sarà tenuta nella Allgemeines Krankenhaus Barmbeck, Amburgo-Wandsbek.

Tassa: Per quelli che risiedono in Europa, la tassa sarà di 100 D.M.

Per quelli che risiedono negli Stati Uniti, America Centrale e Medionale e Canadà, la tassa sarà di $100.00 per corso.

I Corsi: I corsi consisteranno de dimostrazioni pratiche, lezioni e interventi operatori quotidiane attuate dagli insegnanti e dei laureati.

I Direttori: Prof. Dott. Albert Lezius, Prof. Dott. G. E. Konjetzny, Prof. Dott. Hans T. Junker, Prof. Dott. Gerhard Küntscher.

Informazione e domande frequenza per il corsi per laureati saranno ricevute sino al 1 Gennaio 1952 e devono essere indirizzate al Prof. Dott. Albert Lezius, Direttore della Clinica Chirurgica, Università d'Amburgo, Amburgo-Eppendorf, Germania.

Cursos de Post-Graduacao Oferecidos Pelo Capitulo Alemao do Collegio Internacional de Cirurgioes

b. Broncoscopia

de Cirurgioes esta organizando um curso de post-graduacao de quatro semanas. Os seguintes assuntos serao apresentados:

1. Cirurgia do Thorax. Dado pelo Prof. Albert Lezius, director do Departamento Cirurgico, Universidade de Hamburgo e seus assistentes.
   a. Metodos modernos de anestesia em

cirurgia torax com demonstracoes praticas
  - b. Broncoscopia
  - c. Broncografia
  - d. Intubacao
  - e. Cuidados pos-operatorios de arvore bronquial
  - f. Tratamentos operatorios do carcinoma dos pulmoes
  - g. Tratamentos operatorios da bronquiectasia
  - h. Tratamento operatorio da tuberculose pulmonar
  - i. Tratamento operatorio de tumores do mediastino
  - j. Cirurgia do esofago e do cardia
  - k. Tratamento operatorio de doencas cardiacas adquiridas ou congenitas (Tetralagia de Fallot, Buraco de Botal, Coarctacao da Aorta, estenose de valvula aortica, angina pectoris)

2. Cirurgia do Estomago. Dado pelo Prof. Dr. G. E. Konjetzny, Diretor Emerito, Departamento de Cirurgia, Universidade de Hamburgo.
   - a. Anatomia patologica e psiologia patologica da ulcera gastrica
   - b. Operacoes sobre o estomago
   - c. Julgamento do operacao de Dragstedt e simpatectomia
3. Cirurgia Urologica. Dada pelo Prof. Dr. Hans T. Junker, Chefe Clinica Urologica, Allgemeines Krankenhaus Barmbeck, Hamburg-Wandsbek.
   - a. Cistoscopia
   - b. Pilografia
   - d. Diagnostico radiologico das doencas dos rins
   - e. Processos operatorios endoscopicos em tumores da bexiga
   - f. Tumores da prostata (particularmente hipertrofia)
   - g. Prostatectomia
     1. Metodo de Freyer
     2. Metodo de Millin
     3. Metodo de Harris
   - h. Cistectomia total em carcinoma da bexiga
   - i. Assuntos diversos
4. Fixacao de Fraturas de Osos Longos por Cravejamento Metalico Medular: Dado pelo Prof. Dr. Gerard Kuntscher, Chirurgiao en Chefe, Kreiskrankenhaus, Schleswig.
   - a. Consideracoes teoricas sobre cravejamento metalico medular
   - b. Indicacoes para cravejamento metalico medular
   - c. Osos de perna, braco y ante braco
   - d. Cravejamento medular em operacoes para pseudo-artrosis
   - e. Tecnica operatoria
   - f. Film

A Data: A data provanel para inicio do curso e 14 Janeiro de 1952.

Sitio: Cursos pos-graduados em Cirurgia do Estomago e do Thorax serao dados na Clinica Cirurgica da Universidade de Hamburgo. O curso de Cirurgia Urologica sera dado no Allgemeines Krankenhaus Barmbeck, Hamburgo-Wandsbek.

Taxes: Para os residentes nos Estados Unidos, Central e Sul'America e Canada, a taxa sera de $100.00 por curso.

Para os residentes na Europa, a taxa sera de DM 100 para cada curso.

Os Cursos: Os cursos consistirao de demonstracaes practicas, aulas e operacaes dadas por professores e post-graduados.

Diretores: Prof. Dr. Albert Lezius. Prof. Dr. G. E. Konjetzny. Prof. Dr. Hans T. Junker. Prof. Dr. Gerhard Kuntscher.

Informacaes e registro para os cursos de posgraduacao serao recebidas ate 1 de Janeiro de 1952 e devem ser dirigidas ao Prof. Dr. Albert Lezius, Universidade de Hamburgo, Diretor do Departamento Cirurgico, Hamburgo-Eppendorf, Alemanha.

Dates of International Assembly Meetings

University of Bordeaux	May 13, 14
University of Barcelona	May 16, 17, 18
University of Madrid	May 20-23
University of Vienna	May 26, 27
Inauguration of Netherlands Chapter, Amsterdam	May 29, 30

General News Notes

Essay Contest: The Twelfth Annual Essay Contest of the Mississippi Valley Medical Society will be held in 1952. The Society will offer a cash prize of $200, a gold medal, and a certificate of award for the best unpublished essay on any subject of general medical interest (including medical economics and education) and practical value to the general practitioner of medicine. Certificates of merit may also be granted to the physicians whose essays are rated second and third best. Contestants must be members of the American Medical Association and residents and citizens of the United States. The winner will be invited to present his contribution before the 17th Annual Meeting of the Mississippi Valley Medical Society to be held in St. Louis, Mo., Oct. 1-2-3, 1952, the Society reserving the exclusive right to first publish the essay in its official publication—the *Mississippi Valley Medical Journal* (incorporating the *Radiologic Review*). All contributions shall be typewritten in English in manuscript form, submitted in five copies, not to exceed 5,000 words, and must be received not later than May 1, 1952. The winning essays in the 1950 contest appear in the January 1951 issue of the *Mississippi Valley Medical Journal* (Quincy, Ill.).

Further details may be secured from Harold Swanberg, M.D., Secretary, Mississippi Valley Medical Society, 209-224 W. C. U. Bldg., Quincy, Ill.

Plastic Surgery Essay Awards: The Foundation of the American Society of Plastic and Reconstructive Surgery announced the winners of this year's awards in its Competitive Essay, at the Annual Meeting of the Society in Colorado Springs, Oct. 30-Nov. 1, 1951.

Dr. Richard B. Stark, New York City, won a Scholarship Award for his essay: "The Cross-Leg Flap Procedure."

Dr. Kathryn Lyle Stephenson, Santa Barbara, California, with her essay "The Production of Ectopic Cartilage"; Dr. Michael N. Tempest, Leeds, Yorkshire, England, with an essay entitled "Cross-Finger Flaps in the Treatment of Injuries to the Finger Tip", and Dr. Allyn J. McDowell, North Hollywood, California, with an essay entitled "Mass Treatment of Burns in Atomic Warfare", won Honorable Mention.

The Award Committee consisted of: Drs. Robert H. Ivy, (Philadelphia) Neal Owens, (New Orleans); Kenneth L. Pickrell (Durham, N. C.); Lyndon A. Peer (Newark); Clarence R. Straatsma (New York), and Jacques W. Maliniac, exofficio, New York.

For full particulars pertaining to the 1952 Competitive Essay write to the Award Committee, c/o Jacques W. Maliniac, M. D., 11 East 68th Street, New York 21, N. Y.

Dermatologic Congress: The International Congress of Dermatology will hold its tenth annual meeting in London July 21 to 26, 1952. Discussion topics include: *Effects on the Skin and on Skin Diseases of ACTH* and *Cortisone; Treatment of Tuberculosis and Allied Conditions;* and *Pathogenesis of Eczema.* The secretary is Dr. G. B. Mitchell-Heggs. Further information may be obtained by addressing him at the Institute of Dermatology, St. John's Hospital for Disease of the Skin, Lisle Street, London.

Congress on Gastroenterology: *The National Society of Gastroenterology will hold its third European congress April 20 to 25, 1952, at Bologna. Acute and chronic pancreatitis and chronic constipation will receive special attention on the proposed program. The languages of the congress are English, Spanish, French, Italian and German. Information may be obtained from the secretary-general of the congress, Institute of Clinical Medicine, Bologna, Italy.*

Fourth Pan-American Congress of Ophthalmology: *This congress will meet Jan. 6 to 12, 1952, in Mexico City. The clinical and scientific programs have been assigned, and representatives from all the Americas are expected to participate. The president of the congress is Dr. Antonio Torres Estrada.*

Report on Sanitation: *The number of Americans living in communities with sanitation regulations for public eating and drinking establishments that meet standards developed by the Public Health Service, Federal Security Agency, has more than doubled in the last five years, according to Dr. Joseph W. Mountin, Chief of the Bureau of State Services, P[illegible]lth Service.*

New Books

Surgical Pathology of the Mouth. By E. Wilfred Fish. Philadelphia: J. B. Lippincott Co., 1951.

The majority of the eighteen chapters of this book deal with pathologic conditions of the tooth and its supporting structures. The last three chapters deal briefly with tumors of mesenchymal and epithelial tissue associated with the teeth and the gingivae.

The author has confined himself to pathologic studies that have a direct dental application. His book, therefore, deserves recommendation as an aid to the dental student, either before or after he reads a textbook on general pathology.

The illustrations, most of which are photomicrographs, are good. There is a brief summary at the end of each chapter.

ARNO LESHIN, M.D.

Your Mind and Appearance: A Psychological Approach to Plastic Surgery. By Adolph Abraham Apton. New York: Citadel Press, 1951. Pp. 212, with 28 illustrations.

Dr. Apton is a member of the staff of Mount Sinai Hospital in New York and has given much time and study to the problems of plastic surgery. His particular interest in the psychological effect of disfiguring defects at any stage of human life has given rise to the ideas on which this book is based. The volume has, therefore, one element usually absent from a scientific publication, i.e., "human interest" in the sense the phrase has acquired in journalism. The author has a genuine understanding and sympathy for the patient who is psychically handicapped, even by what may appear to others a minor defect. If beauty is in the eye of the beholder, even more is disfigurement, slight or serious, important in proportion to its mental and emotional effect on the disfigured. This psychic damage varies widely, depending on the sensitiveness of the subject.

The book opens with a discussion of defects of infancy and childhood and carries on the subject through adulthood. Great attention is paid to methods of reassuring the patient and establishing sound and confident doctor-patient relations before any corrective procedure is undertaken. The book is one that should appeal to both lay and professional readers and should certainly carry encouragement to those who suffer from disfigurement and do not realize what plastic surgery could do for them. M. T.

Surgical Measures in Hypertension. By Reginald H. Smithwick, Springfield, Ill.: Charles C. Thomas, 1951.

In this monograph the author presents the status of the surgical treatment of hypertension up to the present time. Extensive denervation of the vascular bed is the most widely applicable maneuver. The selection of cases for surgical treatment is most important. In proper hands the mortality should be slight and the statistical chance is claimed to be worth while.

It is the author's opinion that operations which thoroughly denervate the splanchnic bed are the most useful. He advocates exposure which permits exploration of the adrenal glands and kidneys. In this way adrenal tumors may be found and removed, and the useless kidney may be extirpated.

The lumbodorsal technic is the most useful procedure. The sympathetic trunk is removed bilaterally from D8 to L1. In some instances cardiac denervation seems indicated. When very extensive procedures are necessary they should be performed in stages.

A study of the late results indicate that life expectancy has been prolonged. It is stressed that surgical intervention should not be reserved as a last resort.

The material is nicely presented and the text reads clearly. This booklet can be recommended for anyone interested in the subject of hypertension.

Philip Thorek, M.D.

Principles of Orthodontics. By J. A. Salzmann. Philadelphia: J. B. Lippincott Co., 1950. Pp. XIX-887, with 533 illustrations.

This is the most extensive textbook of orthodontics in the English language. Salzmann has endeavored to integrate the fundamental concepts of growth and development with the clinical aspects of orthodontics. The presentation is sometimes marred by a lack of critical evaluation of material: the reader is enabled to form his own judgments, however, by reference to the complete bibliography at the close of each chapter There is a generous number of illustrations, including photographs and many useful charts Except for some intra-oral photographs these are, on the whole, of excellent quality Salzmann's book deserves to be included in the libraries of students and practitioners in dentistry It also offers much pertinent information to those interested in maxillo facial surgery

MILTON B ENGEL, D D S

Aberrations of Sexual Life By Alexander Hartwich London and New York Staples Press, 1951 Pp 343

The book provides a concise and readable down-to-date version of Krafft-Ebing's *Psychopathia Sexualis*, all of which, beyond the first chapter, has been materially edited by Dr Hartwich in order to include aspects of the subjects which have appeared or been clarified since the appearance of the original work

Deviations of the sexual impulse are presented in two groups, the first of which includes sexual anesthesia, hypesthesia hyperesthesia, abnormal intensity of the sexual impulse in childhood, reawakening of the impulse in old age, pedophilia, gerontophilia zoophilia and auto eroticism The second group covers fetishism, sadism, masochism and exhibitionism Detailed explanation of these abnormalities, including many illustrative case experiences, occupies fully two thirds of the volume The remaining third is devoted to a study of homosexuality, and the appendix, a highly interesting essay, deals with therapy and prognosis

The book as a whole is a valuable addition to the library of any student of sexual psychology whether physician or layman Though it cannot be called simple or easy reading neither can it be called difficult or pedantic the only difficulty is that inherent in the subject itself which of course bristles with complications Dr Hartwich has succeeded to an astonishing degree in clarifying these even for the nonprofessional reader To psychologists psychiatrists, students in these fields and others who are sufficiently familiar with their terminology it is highly recommended —M T

Surgical Treatment for Abnormalities of the Heart and Great Vessels By Robert E Gross Springfield Ill Charles C Thomas, 1950

The monograph represents the second printing of the first edition Much of the subject material herein presented has been gathered from the author's previous medical writings The subjects discussed are patent ductus arteriosus defects of the pericardium tetralogy of Fallot right aortic arch double aortic arch anomalous right subclavian artery, and coarctation of the aorta

The section dealing with anomalous right subclavian artery and "dysphagia lusoria" is especially well written

Since the first printing of this work the strides made in the field of cardiovascular surgery have been tremendous It was with this thought in mind that made the section dealing with experimental observations particularly noteworthy

The booklet is nicely written and can be recommended for anyone interested in the subject of cardiovascular anomalies

Philip Thorek, M D

CORRECTION

Due to a printer s error the name of the author, C A Proano C , M D , whose article begins on page 724, was misspelled We trust Dr Proano and the readers will accept our apologies for this error

Abstracts from Current Literature

Carcinoma of the Pancreas. Miller, J. R.; Baggenstoss, A. H., and Comfort, M. W., Cancer 4:233, 1951.

This study, dedicated to the classification of primary pancreatic carcinoma and to the relation of the various classifications to clinical and pathologic behavior, is based on 202 cases of carcinoma of the pancreas proved at necropsy at the Mayo Clinic from 1920 to 1946 inclusive. Carcinomas of islet cell origin were excluded. The following table of the histologic types of lesion observed is presented:

Type	Number		Per cent	
Ductal carcinoma	165		81.6	
Adenocarcinoma		162		80.2
Squamous cell carcinoma		3		1.4
Acinar carcinoma	27		13.4	
Carcinoma of indeterminate origin	10		5	
Large cell carcinoma		6		3
Small cell carcinoma		2		1
Carcinoma resembling sarcoma		2		1
Total	202		100	

The average age at death was 60.7 years. There were 144 men (71.1 per cent) and 58 women (28.7 per cent). In more than two-thirds (71.3 per cent) the tumors were situated in the head of the pancreas and in less than a third (28.7 per cent) they occurred in the body and tail. The body tumors were somewhat larger, on the average, than those in the head.

The authors suggest that the grade of malignancy of carcinoma of the pancreas definitely influences the behavior of the lesion. This conclusion was fortified by the observation that the size of the tumors and the incidence of venous thrombosis and metastasis increased progressively with the grade of malignancy.

They confirmed the importance observations of Kaplan and Angrist that jaundice associated with carcinoma of the pancreas is virtually never the result of compression alone, invasion of the wall of the common duct being necessary for the development of mechanical obstruction.

Pain, stated to be present in 85 per cent of cases, may be the earliest and most persistent symptom. (Parenthetically it may be observed that pain due to pancreatic malignant disease may evade diagnosis for long periods, and in such cases the patients have not seldom been dismissed as psychoneurotics. —Abstractor).

It may therefore be significant that Miller and his co-workers discovered involvement of the pancreatic nerves in 83.8 per cent of their cases of carcinoma of the head of the pancreas.

The frequency of venous thrombosis in cases of pancreatic carcinoma has never been adequately explained. It occurs more than twice as frequently when the carcinoma involves the pancreatic body as when the head is involved. Perhaps patients with carcioma of the pancreatic body and tail live longer than those with the head lesion, so that there is more time for local spread, metastasis and venous thrombosis to develop.

The incidence of fat necrosis (44 per cent) and that of suppuration (6 per cent) were higher in cases of acinar carcinoma than in the ductal variety. This may indicate that acinar carcinomas produce enzymes capable of digesting tissue and are in fact functioning neoplasms. Hemorrhagic pancreatitis was associated with pancreatic carcinoma in only 1 case, in which the neoplasm was of the acinar type.

THOMAS WILENSKY, M.D.

Measurement of Blood Loss During Surgical Operations. Bonica, J. J., and Lyter, C. S., Am. J. Surg. 1:496, 1951.

The authors review the American literature and present a simple and practical method which they have used in 748 operations. For most of this study they used the gravimetric technic, which is based on the weighing of sponges, packs, towels or other materials that have been linen employed for collecting blood during an operation. Dry sponges and packs do not have to be weighed before every operation, since they are remarkably uniform in weight and dryness when they come out of the autoclave. The complete gain in weight of the sponges is treated as blood loss, each gram being considered as equivalent to 1 cc. No correction is attempted for the slight variation of the specific gravity of the blood.

The gravimetric method affords a simple, practical and accurate means of measuring the amount of blood lost from the surgical wound. As there is additional blood is lost into the tissue and in vessels proximal to ligatures, the amount determined by the gravimetric method is the minimal amount to be replaced.

The authors also bring out the fact that replacement of blood lost during surgical operations is an essential part of the operation, to prevent shock and decrease postoperative morbidity; i.e., for optimal results the blood must be administered as it is being lost and in proper amounts.

CHARLES C. ABBOTT, M.D.

Afferent Innervation of Peripheral Blood Vessels Through Sympathetic Trunks.

Kuntz, A., South M. J. 44:673-678, 1951.

It is difficult to explain the deep burning, prickling, tingling sensations in lower extremities which are paralyzed and insensitive to the usual tests for exteroceptive and proprioceptive sensation after the occurrence of a transverse lesion of the spinal cord, yet they are common clinical phenomena. Lumbar sympathectomy has been used to relieve such pain. This supports the assumption that afferent nerve fibers remain patent after abolition of responsiveness to the tests.

Dr. Kuntz, at the St. Louis University Medical School, performed multiple experiments on series of cats, using both the upper and lower extremity in attempts to demonstrate the presence of afferent innervation of peripheral blood vessels passing through the sympathetic trunks.

In one series of cats the thoracic spinal nerves were divided unilaterally distal to the spinal ganglia, with the communicating rami left intact, or the white communicating ramus of the first sympathetic nerve was severed and the sympathetic trunk was divided just caudal to the first thoracic ganglion. In others, both roots of the lumbar nerves were divided distal to the spinal ganglia, the communicating ramus being left intact. After an interval of three to five weeks after the operation, to insure complete degeneration of the divided myelinated fibers, the animals were killed. Osmic acid preparation of the gray communicating rami taken from the cats which had been subjected to unilateral operation showed consistently that those taken from the operative side included fewer myelinated fibers than did corresponding ones from the opposite side. Preparations from the latter side corresponded well with specimens removed from man. The conclusions were that the myelinated fibers had undergone degeneration on the operative side. Since no afferent fibers except those which arise in the sympathetic trunk ganglia are known to traverse the gray communicating rami or sympathetic roots, it must be assumed that the myelinated fibers which underwent degeneration after operation represent afferent spinal nerve components.

In another series of cats the spinal column was transacted at the level of the third lumbar segment. With the animals under nembutal anesthesia, the large nerves, such as the sciatic and the femoral, were stimulated. This produced a slight rise in blood pressure, as indicated by kymographic records, and a slight alteration in respiration. Stimulation of the sympathetic trunk in the lower lumbar or the sacral segments elicited similar blood pressure and respiratory responses. This demonstrates conduction from the hindlimb into the spinal cord through afferent spinal nerve fibers which traverse the sympathetic trunk.

Other investigators, using the oscilloscope attached to the distal segment of the sympathetic trunk severed in the lumbar region, observed that measurable impulses could be noted when lactic acid was injected into the ipsilateral femoral artery, suggesting that direct stimulation of blood vessels may result in afferent conduction through the sympathetic trunk. The data support the assumption that the sympathetic vasomotor nerves play a causative role in the production of pain associated with deficient circulation in the extremities. An area which has become painful owing to reduction in its blood supply tends to become increasingly ischemic as a result of increased reflex vasomotor tonus. The data obtained from patients with paralyzed extremities in which burning and prickling pains and tingling sensations arise spontaneously support the assumption that the afferent nerve fibers which reach the extremities through the sympathetic trunks conduct not only impulses which result in painful sensation but impulses which reflexly activate the patent sympathetic nerve in the extremity. Consequently there is an increased vasomotor tonus in the extremity and the pain is aggrevated. Sympathectomy not only interrupts the afferent nerve fibers through which the pain is mediated but abolishes the vasomotor reflex tonus and thus insures improvement in the circulation of the limb within the limits imposed by the skeletal muscle paralysis.

H. J. ROSEVEAR, M.D.

Use and Abuse of the Dextrose Tolerance Test. Soskin, S., Postgraduate Med. 10: 108-116, 1951.

Soskin states, "The dextrose tolerance test is commonly misinterpreted as an index of the ability to oxidize carbohydrates." He describes a series of ingenious and interesting experiments to show that three factors are involved in the disposal of sugar used in a tolerance test. They are hepatic regulation, increased utilization and increased glycogen storage. The hepatic regulation is the most important of these factors. It is shown that the oral ingestion of dextrose does not give reliable results, but when the dextrose is given intravenously (in smaller amounts) more reliable information may be obtained. The intravenous method is of greater value not only in borderline of diabetes but as a test of liver function. A diagnosis of early diabetes obtained by the oral test, may prove mistaken; hepatic disease may be revealed when the intravenous method is used. Again, abnormal tolerance curves obtained by the oral method may be due to abnormal intestinal absorption, which, in turn, may be due to thyroid and or anterior pituitary deficiency. The intravenous test is an aid to the avoidance of errors caused by irregular intestinal absorption. Furthermore, comparison of the oral and the intravenous curves may aid in differentiation between diabetes, hepatic and anterior pituitary diseases.

E. H. BOYER, M.D.

A Single Layer Open Intestinal Anastomosis Applicable to the Small as Well as the Large Intestine. Gambee, L. P., West. J. Surg., Gynec. & Obst. 59:1, 1951.

The author discusses a method of open intestinal anastomosis which, he states, "lends itself to precision and can be done under the most difficult circumstances. It has not produced obstruction. No special instruments are required—its simplicity makes it possible for the occasional operator to acquire confidence and skill in its use."

The technic is as follows: The fecal stream is controlled by a catgut tie around the intestine about 2 inches (5 cm.) from the anastomosis. This tie encompasses only the bowel and does not involve the marginal blood vessels. It is not tied tightly, and when removed leaves no mark. Single, interrupted sutures of No. 000 silk or No. 50 cotton are used throughout. Mattress sutures are never used, as they tend to produce strangulation of tissue. The first suture is placed close to the mesentery, includes all layers and is tied on the mucosal side. A second similar suture is placed at 90 degrees from the first, and the third is placed at 90 degrees in the opposite direction. These are used for traction sutures, and the interim sutures are placed at ¼-inch intervals in like manner, including a deeper bite on the colon side of the anastomosis. A fourth traction suture is placed at the antimesenteric portion of the ends to be approximated. This suture passes from the serosa through all layers and out through the redundant mucosa, into the other lumen through its mucosa and thence out through all layers, mucosa, submucosa, muscularis and serosa. This and all remaining sutures are tied on the serosa. Similar sutures are placed close to the original 90-degree traction sutures so that the latter may be cut in the lumen. The anastomosis is then completed with ease, identical sutures being used. Although additional sutures are seldom needed, they may be placed as indicated.

During this anastomosis there is slow but free bleeding until the last suture is tied. The rent in the mesentery is then closed, not by suture, but by grasping opposing points with hemostats and then tying over them.

HOWARD S. STERN, M.D.

Nontraumatic Rupture of the Common Bile Duct. Gariepy, L. J.; Capano, O. A., and Gardner, L. W., Am. J. Surg. 3:357-362, 1951.

Spontaneous rupture of the common bile duct is a rare accident. The authors report 2 cases, in 1 of which the course was followed by death in a few hours. The other patient made an uneventful recovery.

In both cases the underlying cause was apparently the presence of chronic cholecystitis with cholelithiasis. It would seem that the same factors and conditions that lead to perforation of the gallbladder may also cause rupture of the common duct.

The condition necessitates immediate operative intervention and must be distinguished from pancreatitis and perforated peptic ulcer. On operation free bile in fairly large amounts will be found within the peritoneal cavity. The disease has a high mortality rate and a severe shock-like reaction at the time of the accident.

MORRIS T. FRIEDELL, M.D.

Cancer of the Lip Upchurch, S L and Marzoni, F A, J M A Alabama 20 66, 1951

Factors that contribute to the development of carcinoma of the lip are discussed, together with the microscopic pathologic picture, clinical appearance, differential diagnosis and metastatic spread The removal of lesions that are nonmalignant but likely to lead to malignancy will contribute to the control of cancer of the lip It is therefore recommended that all lips showing thickened patches of leukoplakia, chronic scaling keratoses, persistent inflammatory ulcers or recurrent fissures receive treatment Surgical removal and microscopic study, rather than irradiation, appears to be the procedure of choice For cancer already present, surgical intervention is the treatment of choice (1) for all small lesions, (2) for extensive lesions when a good cosmetic result is not possible with roentgen therapy because of the resulting defect, (3) for small or moderately large lesions that have already metastasized (surgical management of the primary lesions will allow immediate care of the metastatic lymph nodes), (4) when there has been previous inadequate roentgen therapy with marked changes in the surrounding areas, and (5) when radiotherapeutic skill is not available

If there is definite enlargement of the lymph nodes the tumor should be considered malignant unless proved otherwise, and a radical neck dissection should be done In the absence of indications, prophylactic neck dissections are not done The prognosis is excellent for cure of the primary lesion and fairly good for cure of the lymph node metastases

RAYMOND GREEN, M D

Thyroiditis Stalher, L K, and Wolther, C I Am J Surg — 381, 1951

Thyroiditis may be acute, subacute or chronic The acute form may occur with or without suppuration, and it may be due to specific infections, such as tuberculosis syphilis, actinomycosis, etc

Subacute thyroiditis is a vague entity in which the diagnosis and clinical signs are often difficult to recognize The patients are usually 30 to 50 years old Many have had a recent virus infection, often with tonsillitis or a sore throat This condition is also known as giant cell thyroiditis and was described by De Quervain in 1936 Fever, localized pain tenderness and swelling are present later, another part of the gland may become involved and the first area undergo resolution Then, microscopically degenerative changes are observed with destruction of acini and the formation of pseudo giant cells Spontaneous recovery usually ensues, often after a few months

Two distinct types of chronic thyroiditis exist They are struma lymphomatosa (Hashimoto's disease) and struma fibrosa (Riedel's struma) The former occurs especially in middle aged women and after years of enlargement a sudden increase in size brings them to the surgeon Moderate hypothyroidism and uniform firm and rubbery enlargement of the gland are suggestive of the disease On section the pink tissue resembles a cut lymph node Marked lymphoid infiltration is present throughout and the glandular epithelium is seen as small acini of pale staining cuboidal cells with large vesicular nuclei The acini are virtually empty of colloid If fever is present it fails to respond to antibiotics but operation is curative A subtotal thyroidectomy suffices Roentgen therapy is also of value if the diagnosis can be made before operation

Riedel's struma (woody thyroiditis) is a chronic fibrosing inflammation of the thyroid, which may even invade the perithyroid structures Dysphagia and dyspnea are common Mild hypothyroidism and a small but very firm gland on palpation are suggestive signs Marked adhesions to surrounding structures are observed on attempts at surgical extirpation The whitish cut surface is fibrous, hard and avascular so that one may confuse it with cancer of the thyroid In some cases this disease may possibly represent the end result of subacute thyroiditis, because, in addition to the destruction of acini and their replacement by fibrosis, scattered pseudo giant cells may be present Subtotal thyroidectomy is curative

RICHARD A LEONARDO, M D

Plasmosan Thrower, W R, and Campbell, H, Brit M J 1 1096, 1951

The authors discuss the use of Plasmosan as a substitute for plasma This substance contains polyvinylpyrrolidone in combination with salts normally found in plasma Its toxicity is slight, laboratory animals tolerating up to 8 Gm per kilogram of body weight Clinically its use parallels that of plasma No allergic reactions have yet been encountered

HOWARD S STERN, M D

Surgical Repair of Mitral Insufficiency. Bailey, C. P.; O'Neill, T. J., Glover, R. P.; Jamison, W. J., and Redondo, R., Dis. of Chest 2:125, 1951.

In rheumatic mitral valve stenosis, associated insufficiency is relatively uncommon. Some patients with insufficiency have a "parodoxical valvular dysfunction", that is, that mitral valve opens on ventricular systole.

The surgical procedure used is termed "transventricular pericardial tamponage". This paper brings out the failure of free grafts because of subsequent atrophy and fibrosis. In the procedure used by the authors the heart chamber is explored through the left auricular appendage; this is termed "transauricular intracardiac digital visualization." A pericardial flap preserving the nerve and blood supply is obtained. This is converted into a tube with the smooth epicardial surface exposed. This graft is pulled through the cardiac ventricle, with avoidance of the coronary vessels and with adequate redundancy to check regurgitation by tamponade. It is presumed that the graft will retain its elasticity and flexibility indenitely, though only the passage of time can finally prove this assumption.

Among 7 patients so treated there were no fatalities. In 1 case the treatment was considered unsuccessful, probably due because of inaccurate positioning of the graft.

CHARLES C. ABBOTT, M.D.

Hypothyroidism in Childhood. Braid, F., Brit. M. J. 1:1169, 1951.

Hypothyroidism in children can be divided into these groups. In group 1, congenital hyothyroidism, there is a developmental defect in the thyroid gland or the gland has been damaged *in utero* as a result of maternal infection. The child is usually slow in feeding and lethargic. At the age of 4 months the heavy features, the dry skin, the protruding tongue, the sad expression, the hoarse voice, the myxedematous tissue, the distended abdomen and slight anemia are noted. Later there is more evidence of stunted growth. The prognosis is good.

In group 2, postinfective hypothyroidism, symptoms appear several months after an acute infection. The symptoms are those of hypothyroidism, and differentiation is made by the history of an infective process. The prognosis is good.

In group 3, endemic cretinism, the children are usually seen late and there is a constitutional degenerative state associated with hypothyroidism. There is slow mental and physical development before the signs of hypothyroidism supervene. A goiter may be present early or may be delayed until adolescence. The prognosis is not good, for the children usually remain undersized and of low intelligence.

In hypothyroid children there is an arrest of growth of the skeletal system, resulting in a long body with short limbs. Atony of the muscles is common. Anorexia, constipation and meteorism are present. Chronic diarrhea is noted in an inadequately treated child; this may clear up when thyroid extract is increased. On the other hand, in spite of adequate therapy, constipation of the type associated with megacolon may develop. Fecal incontinence is occasionally noted and may be attributed to subnormal mentality. Some anemia of the normocytic orthochromic type is seen. Blood chemistry: The cholesterol content of the blood is over 200 mg. per hundred cubic centimeters, but the serum phosphatase level is low. There is a diminished rate of exchange of calcium and phosphorus. The heart is not altered as in adults.

A. H. LETTON, M.D.

> Ignorance is mere privation by which nothing can be produced: it is a vacuity in which the soul sits motionless and torpid for want of attraction; and, without knowing why, we always rejoice when we learn, and grieve when we forget.
>
> —SAMUEL JOHNSON

In Memoriam

CUSTIS LEE HALL

MD, FACS, FICS

1888-1951

Dr Custis Lee Hall, past president of the United States Chapter of the International College of Surgeons and prominent in all College activities for many years, died suddenly on November 14 His death has come as a great shock to all members and friends of the College A pioneer member and leader, he has made matchless contributions to the work of the College throughout the civilized world, and through these contributions has done much to advance the ideal of international peace

Custis Lee Hall was born on July 15, 1888 in Washington, D C, the son of Edward Payson Hall and the former Miss Leena Custis Watkins He was graduated from the George Washington University Medical School in 1912 His special training in orthopedics was obtained in the Massachusetts General Hospital in Boston

Dr Hall served in the United States Army Medical Corps with the British Expeditionary Forces under Sir Robert Jones in 1917 and 1918 His rank was that of a major On his return to the United States in 1920 he entered the practice of orthopedic surgery He was Clinical Professor of Orthopedic Surgery at George Washington University from 1920 to the time of his death He was also Orthopedic Consultant at Mt Alto Hospital for many years, and was serving the United States Naval Medical Center at Bethesda, Maryland, at the time of his passing

Dr Hall is survived by his widow, Mary Golden Hall, and by one son and three daughters His burial took place with military honors at Arlington National Cemetery on November 14

The officers and members of the International College of Surgeons extend the warmest sympathy and condolence to the bereaved family and to Dr Hall's many friends It is our hope that his fine record of service, which can never be forgotten by those who knew him, will provide some consolation to those who loved him The College salutes the memory of a great exponent of scientific truth and international understanding

ALFRED W. ADSON

MD, FACS, FICS

Dr Alfred W Adson, senior neurosurgeon at Mayo Clinic, died recently at the age of 64 Dr Adson received his medical degree from the University of Pennsylvania in 1914 Immediately after his graduation he became a Fellow in Surgery at the Mayo Clinic and in 1917 became a member of the Permanent Staff

A prominent and constant contributor to the American surgical literature, Dr Adson wrote many articles on the development and improvement of modern surgical technic, the treatment of tumors of the brain and spinal cord and the technic of sympathectomy as employed in therapy of peripheral vascular diseases and hypertension He was a member of the American Medical Association, the American Surgical Association, the American College of Surgeons, the Society of Neurosurgeons and the International College of Surgeons

In all these relations, as well as by his family and friends, Dr Adson will be deeply mourned The officers and members of the International College of Surgeons extend the warmest sympathy and condolences to those most bereaved by his passing

HENRI COSTANTINI

MD, FICS

Prof Henri Costantini, a member of the newly formed French Chapter of the International College of Surgeons and an outstanding French surgeon, met an accidental death some weeks ago in Bordeaux, France Dr Costantini was "Interne des Hospitaux de Paris," a member of the Academie de Chirurgie de Paris, and Professor of the Surgical Clinic at the Faculty of Algiers In addition, he made a special study of echinococcic disease

A gallant-minded man as well as a great surgeon, an eager student of his profession in all its aspects, Prof Constantini will be greatly missed by all his colleagues The International College of Surgeons extends heartfelt sympathy to his family and friends

BURHANEDDIN TOKER

M.D., F.I.C.S.

Prof. Dr. Burhaneddin Toker, president of the Turkish Chapter of the International College of Surgeons, died on August 20 at the age of 61. Born in Van, Turkey in 1890, Dr. Toker was graduated from the University of Istanbul Medical School in 1910 and studied at the Eppendorf Hospital in Hamburg, Germany for six years. He formed the first modern surgical clinic in Turkey and since 1921 had been chief surgeon at the Cerrahpasa Hospital in Istanbul. Dr. Toker was professor of surgery and director of the First Surgical Clinic at the University of Istanbul Medical School.

Prof. Toker's death was the result of a heart attack which occurred en route to Turkey from a few months' rest in Switzerland. The funeral was held on August 23 at the Beyazit Mosque, and his coffin was carried by his medical students to the University of Istanbul Hall, where an impressive ceremony was held. Prof. Dr. Fahri Arel, Dean of the Faculty of Medicine, said of Dr. Toker: "The University of Istanbul has lost one of its famous men and Turkey its best surgeon."

Dr. Burhaneddin Toker

LOUIS D. MOORHEAD

M.D., F.A.C.S., F.I.C.S.

On September 14, 1951, Dr. Louis D. Moorhead, noted Chicago surgeon, died of a heart attack at the age of 58. He received his medical degree from Rush Medical School in 1917. Dr. Moorhead served his internship at the Cook County Hospital. He was formerly dean and chairman of the Department of Surgery at Loyola University School of Medicine, now the Stritch School of Medicine. At the time of his death, Dr. Moorhead was the senior attending surgeon at Mercy Hospital in Chicago, where he had formerly been chief of staff. In addition to being associated with several railroads as consulting surgeon, he was affiliated as consulting surgeon with several of Chicago's hospitals, among them the Holy Cross Hospital, the Loretto Hospital, the Lewis Memorial Hospital, the Misericordia Hospital and the St. George Hospital. His practice was devoted entirely to general surgery.

Dr. Moorhead, an active Catholic layman, was Chief of the Medical Board of the Archdiocese of Chicago and personal physican to Cardinal Stritch. He was also on the board of governors of Catholic Charities and the Catholic Extension Society of America. In March 1950 Pope Pius XII awarded Dr. Moorhead the Papal honor of knight commander with grand cross and star, the highest honor in the Knights of St. Gregory.

Dr. Moorhead was a member of the American Medical Association, the Chicago Medical Society, the Illinois State Medical Society, the American Board of Surgery (founder group), the American College of Surgeons and the International College of Surgeons.

The officers and members of the International College of Surgeons extend sincere sympathy to Dr. Moorhead's family and his many friends.

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Index, Volume XVI, July-December, 1951

By Subjects and Authors

INDEX TO ARTICLES

- Abortion, tubal 765
- Abstracts from Current Literature
  - July 132
  - September 398
  - October 538
  - November 672
  - December 806
- Adrenal glands
  - irradiation of 222
- Anastomosis
  - vascular 1
- Anesthesia
  - Dromoran
  - refrigeration 346
- Antral mucosa
  - prolapse of 475
- Appendix
  - surgical approach to 470
- Arthrodesis
  - compression fixation, of knee 93
  - of shoulder 407
- Ascites, abdominal
  - due to hepatic cirrhosis 199
- Block
  - of stellate ganglion 185
- Blood
  - arterial transfusion of 716
- Book reviews
  - July
    - Boshes, Benjamin, *A Review of Medicine* 131
    - *Hebrew Medical Journal*, Moses Einhorn, Editor 130
    - Kovacs, Richard, *Light Therapy* 130
    - Macintosh, R R, *Lumbar Puncture and Spinal Analgesia* 130
    - Paolucci, Rafaele, *Surgical Techniques—Thoracic Surgery, (Techniche Chirurgiche — Chirurgia Toracica)* 131
  - September
    - Alvarez, Walter C, *The Neuroses Diagnosis and Management of Functional Disorders and Minor Psychoses* 396
    - Jones, A Morgan, *Heart Disease in Pregnancy* 396
    - Livingston, W K, *Pain Mechanisms* 396
    - Pool, J Lawrence, *Neuro Surgical Treatment of Traumatic Paraplegia* 397
    - Prudente, Antonio and Melega, Henrique, *Nouvelles Techniques Operatoires dans la Chirurgie du Cancer (New Operative Technics in the Treatment of Cancer* 397
    - Schonbauer, Leopold, *Lehrbuch Der Chirurgie* 395
    - Schwab, Robert S, *Electroencephalography in Clinical Practice* 395
    - Steger, Margaret, *Hypnoidal Psychotherapy* 395
  - October
    - Allen, Arthur C, *The Kidney Medical and Surgical Diseases* 537
    - Darget, Raymond, *Malignant Tumors of the Bladder Their Treatment via the Open Bladder* 536
    - Iselin, Marc, Beret, Simone, and Toutain, Jean-Marie, *Nonoperative Treatment of Perforated Gastroduodenal Ulcer* 537
    - McComb, Stanley J, *Preparation of Photographic Prints for Medical Publication* 536
    - Snyder, Eugene F, *From a Doctor s Heart* 536
  - November
    - Coller, Frederick A, Blain, Alexander, and Andrews, Gould, *Indications for and Results of Splenectomy* 671
    - Cunningham, John F, *Textbook of Obstetrics* 671
    - Halperin, George, *Your Blood Pressure and You* 670
    - Narath, Peter A, *Renal Pelvis and Ureter* 670
  - December
    - Apton, Adolph Abraham, *Your Mind and Appearance* 804
    - Fish, E Wilfred, *Surgical Pathology of the Mouth* 804

  Gross, Robert E., *Surgical Treatment for Abnormalities of the Heart and Great Vessels* 805
  Hartwich, Alexander, *Abberations of Sexual Life* 804
  Salzman, J. A., *Principles of Orthodontics* 804
  Smithwick, Reginald H., *Surgical Measures in Hypertension*........ 804
Bowel, perforation of................. 776
Burns
  in ophthalmologic practice 356
Bursitis
  acute subdeltoid 185
Carcinoma
  of pancreas 631
  of rectum 265
  of stomach 560
  of ureter 141, 160
Cardiovascular disease
  surgical treatment of 1
Cataract
  in children 608
Cervical rib 546
Chapter News
  July 117
  August 247
  September 388
  October 532
  November 666
  December 796
Colon, lesions of 454
Cyst
  ovarian 567
  ovarian, in children 724
  retroperitoneal 350
Diaphragmatic hernia 374
Disc, intervertebral
  rupture of 746
Diverticulum, Meckel's 22, 107
Drain, modified T tube 479
Drainage
  of infected peritoneal cavity......... 231
Dromoran
  in general surgery 779
Ducts, pancreatic 285
Editorials
  Iodine as a Skin Antiseptic Prior to Abdominal Operations (July) 115
  Summing Up the Summaries (July).. 116
  The Paris Orthopedic Clinics (August) 245
  Radical Mastectomy: A Comment on the Validity of the Procedure (September) 385
  College Activities (October) 492
  The International College of Surgeons: A Teaching Institution (November) 659
  History of Regional Enteritis (December) 790
  Practical Aspects of Doctor-Patient Relations (December) 794
Esophageal hernia 578
Esophagus
  surgical treatment of 12
Esophagitis 740
Estradiol
  in pituitary exophthalmos 98
  use in the menopause 622
Exophthalmos, pituitary 98
Fistula
  genital 460
  surgical arteriovenous 287
Femur
  measurement of 342
Forceps, scalp
  indications for use 382
Fracture
  of forearm 175
Gallbladder
  perforation of 110
Gallstones
  in gastric wall 105
  obstruction due to 325
Gastric polyposis diffuse 240
Gastric surgery, preoperative and postoperative care 73
General News Notes
  September 392
  October 534
  November 669
  December 803
Glaucoma 58
Hamartoma, Myocpithelial of
  stomach wall 48
Hernia
  difficult 637
  esophageal hiatus 578
  hiatus, diaphragmatic 374
  inguinal 776
Hysterectomy
  abdominal total vs. subtotal 486
  in private practice 365
Intervertebral disc
  rupture of 746
Intracardiac surgery 768
Intrathoracic procedures 424
Irradiation
  of adrenal glands 222
Lesions
  adult, in young persons............ 334
  multiple, of colon 454
Lobotomy, frontal
  for phantom limb pain 432
Mediastinum, tumors of 684
Mesh, tantalum 637

Menopause, postsurgical 622
Nailing, medullary 407
Obituaries
  July
    Abbott, William Richard 137
    Kalima, T E M 137
    Miles, Bertram James 138
    Raiter, Roy Ferdinand 138
    Reed, Charles Clay, Jr 137
    Robbins, Charles Mortimer 138
  August
    Knowles, Frederick 262
    Lull, Clifford Bell 262
    Murphy, Raymond James 262
  September
    Buda, Alfred Marion 404
    Do Amaral, Atila Barreira 404
    Fisher, Roy A, Jr 404
    Spruell, William Hugh 404
  October
    Doms, Henry C 540
    Stoloff, Isaac Arthur 540
    Xelowski, Thaddeus Zigmund 540
  November
    Acuff, Herbert 678
  December
    Adson, Alfred W 811
    Constantini, Henri 811
    Hall, Custis Lee
    Moorhead, Louis D 812
    Toker, Burhaneddin 812
Obstruction, intestinal 325
Osteoarthritis
  of hip 309
Ovary, tumors of 567
Pain, phantom 436
Pancreas
  carcinoma of 631
Pancreatic ducts
  visualization of 285
Pancreatitis, acute 337
Papilloma
  of bladder 753
Perforation
  of bowel 776
  of gallbladder 110
Peritoneum
  drainage of 231
Phleboliths 419
Photography, surgical
  automatic 213
  endoscopic 783
  simplified 208
Placenta, retention of 445
Plastic surgery
  of nose 165
  of tissue defects 436
Pregnancy, tubal
  bilateral successive coexistent 654
  with abortion 765
Prolapse
  of antral mucosa 475
  of uterus 37
Prostatectomy
  retropubic 481
  suprapubic 318
Rectum
  carcinoid tumors of 265
Repair
  of subcutaneous tissue defects 436
Rhinoplasty
  problems in 165
Spine medullary K nailing of 407
Spleen
  surgical disease of 531
Splint
  for buttonhole rupture of finger tendon 654
Stenosis
  congenital pulmonary 602
  pulmonary valvular 768
  pyloric 105
Stomach
  diffuse polyposis of 240
  surgery of 73
Stomachwall
  myoepithelial hamartoma of 48
Sulfhydryl
  in ophthalmology 356
Tissue defects
  subcutaneous, repair of 436
Treatment
  of acute subdeltoid bursitis 185
  of burns in ophthalmology 356
  of cardiovascular disease 1
  of cataract 608
  of diaphragmatic hiatus hernia 374
  of esophagus 12
  of gastroduodenal ulcer 379
  of glaucoma 58
  of osteoarthritis of hip joint 309
  of uterine prolapse 37
  of vaginal infection 86
Tumors
  of mediastinum 684
  of ovary 567
  of stomach 560
  retroperitoneal 350
Ulcer
  bleeding peptic 644
  perforated gastroduodenal 379
Ureter, primary carcinoma of 141
Uterus
  prol[illegible] 37
  [illegible] 706
Vagina
  inf[illegible] 86

INDEX TO AUTHORS

Alexander, Maurice H. 165
Adson, Alfred W. 546
Anderson, M. N. 578
Atherton, Lytle 160
Atkinson, Donald T. 58
Babington, S. H. 73
Bacon, Harry E. 256, 694
Behrend, Albert 454, 740
Behrents, E. G. 175
Beller, A. J. 432
Berson, Morton I. 436
Betts, Reeve H. 424
Booker, David E. 445
Borges, E. J. 12
Bowen, J. Andrew 160
Button, Helen L. 86
Calihan, Walter A. 325
Cangelosi, Joseph P. 110
Cantor, Meyer O. 631
Carlon, Carlo A. 1
Carnazzo, S. J. 22
Chapchal, George 309
Connolly, Earl A. 644
Crescente, Fred G. 779
Cruthirds, Archie Edward 356
Daley, William 98
Daniel, Walter W. 706
de Groat, Albert 289
de la Pena, Alfonso 419
De Marchi, Renato 1
Denee, H. B. 98
Dew, Robert S. 289
Doane, Joseph C. 346
Doege, Paul S. 486
Dotter, Charles T. 684
Douglas, George Capers 567
Douglas, Gilbert F. 567
Douglas, Gilbert F., Jr. 567
Dul, Emil 231
Eberle, Johannes 379
Ersner, Matthew S. 165
Fallis, Laurence 337
Fell, Egbert H. 768
Feit, Harry L. 783
Filho, Venancio Alves 350
Goldstein, Hyman I. 790
Gordon, Everett J. 185
Greene, Earle I. 470
Greene, J. Major 470
Hack, Rudolf W. 37
Haking, Leonard 631
Hammer, John M. 289
[illegible], H. Sidney 289
[illegible], Thomas H. 740
Hickerson, R. G. 175
Hittner, V. J. 475
Hulbert, Harold F. 325
Hunter, James A. 746
Inman, John G. 706
Johnson, William 175
Jones, Eli Sherman 479
Kalvelage, Edward 110
Kanter, Aaron E. 37
Klawans, Arthur H. 37
Konuralp, Halit Ziya 105
Koontz, Amos R. 637
Krueger, Frederick J. 93
Lazarus, H. M. 460
Leger, Lucien 285
Lehman, W. J. 342
Lloyd, John T. 208
McCrea, Lowrain E. 694
McGraw, A. B. 101
McGreevy, E. J. 22
MacGregor, John R. 289
Malstrom, B. E. 175
Manzanilla, Manuel A., Jr. 222
Marshall, Samuel F. 560
Michalany, Jorge 350
Michele, Arthur A. 93
Mondini, Paolo G. 1
Monroe, Robert F. 445
Myers, David 165
Navarro, Edgard Ferraz 350
Nechtow, Mitchell J. 86
Noonan, John J. 794
Nordland, Martin 731
Norland, Martin R. 731
Noyes, Marion B. 746
Okie, M. V. 98
O'Neill, Clement P. 753
O'Neill, J. Norman 374
Osius, Eugene A. 289
Peale, Augustin R. 265
Peyser, E. 432
Phadke, G. M. 481
Pipkin, Garrett 407
Potts, Willis J. 602
Proano, Carlos A. 724
Randazzo, Anton P. 231
Reich, Walter J. 86
Reig, J. 419
Schnee, Charles F. 199
Simpson, Wyatt C. 334
Soloway, Herman M. 141
Soresi, A. L. 213
Soule, S. D. 622
Sowka, Albin J. 240
Spier, E. 651

Sprague, Edward A 765
Stein, Hymen D 346, 454
Steinberg, Israel 684
Stubbs, Donald 716
Tavenner, Michael C 265
Thorek, Max 48, 153, 681
Trible, G B 759
Trimpi, Howard D 694
Vaidya, H L 318
Van Demark, Robert E 649
Vernon, Sidney 776
Vincenti, Angelo L 110
Wallace, H Glen 365
Warszewski, Edward H 240
White, Charles S 716
Williams, Russell B 644
Wolfe, Otis R 608
Wolfe, Russell M 608
Zacherl, H 382

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